The RUBBER AGE

VOL. 25, No. 11 SEPTEMBER 10, 1929

Late News of the Rubber Industry

Miller Rubber Company Loss Is $664,163 for Six Months

ALTHOUGH still showing a loss in its operating income account, the semi-annual statement of the Miller Rubber Company of New York, Akron, O., represents a substantial improvement over that of last year and indicates that the company is making progress in its financial comeback. For the six months ended June 30, the company reports a net loss of $664,163, as compared with a net loss of $3,121,861 in the first half of 1928.

There was an operating profit of $274,593, which was wiped out by interest charges of $285,839 and depreciation and obsolescence charges of $652,917. The company is reported to be rebuilding its dealer organization and expanding its line of products.

For the full year of 1928, the Miller Rubber Company had a deficit of $3,434,902, and in 1927 a loss of $392,632. During each of the five previous years, however, it reported net profits as follows: 1926, $1,025,454; 1925, $3,533,201; 1924, $2,216,000; 1923, $2,060,000; and 1922, $2,756,000.

The consolidated balance sheet of the company and its subsidiaries shows total assets of $20,426,303 as of June 30, 1929, as compared with $18,883,541 on December 31, 1928. Of this amount, land, buildings, machinery and equipment were represented by $7,604,683 and inventories by $6,274,523. Cash was reported as $1,356,914 and notes, acceptances and accounts receivable at $4,421,731.

Capitalization of the Miller Rubber Company consists of an authorization of $20,000,000 in 8 per cent cumulative preferred stock of $100 par value, of which $11,277,300 is outstanding, and 400,000 shares of no-par common stock, of which 260,264 shares are outstanding. Accumulated preferred dividends amounted to 10 per cent on June 1, 1929, and no dividends are being paid at present on the common stock.

Following the issuance of the semi-annual financial report, there were the usual rumors to the effect that Miller would be absorbed by the Goodyear Tire & Rubber Company, but executives of both firms treated these as nothing more than street reports. Commenting on these rumors, the Akron *Times-Press* said last month, "Several meetings have been held in Cleveland between parties interested in such a proposition, it is authentically learned. It was pointed out that the directorates of the two concerns are interlocking. Members of Otis & Company are directors of both Miller and Goodyear. Miller's affairs have been under the closest scrutiny since prominent members of the Goodyear sales organization, headed by L. C. Rockhill, one of the outstanding men in the industry, went to the smaller company in an attempt to again place it on a sound basis."

William O'Neil, president of the General Tire & Rubber Company, officially denied that there was any prospect of his company merging with Miller at the present time.

Automotive Accessory Industry Starts Third Quarter at High Level

HAVING closed the first half of the year with business substantially ahead of any previous six months' period, automotive parts-accessory makers maintained heavy schedules throughout July and August and will apparently operate throughout the third quarter at a higher level than is usual for this time of year, according to the Motor and Equipment Association.

Original equipment, service parts and service equipment shipments were ahead of July last year, with service parts business also running ahead of June this year. In line with the moderate decline in car production, original equipment makers' business receded slightly from June as did the business of manufacturers of garage equipment and tools. Accessory makers' sales in July gained slightly over June, but the volume of their business was below last year. Wholesalers of automotive equipment, members of the association, had seasonally good business in July, the aggregate sales for this group running equal with June.

Aggregate shipments in July of several hundred manufacturers supplying parts and accessories to the car and truck manufacturers and parts, accessories and garage repair equipment to the wholesale trade, were 188% of the January, 1925, base index of 100, as compared with 208 in June and 187 in July last year.

Parts and accessory manufacturers selling their products to the car and truck manufacturers for original equipment made shipments aggregating 205% of the January, 1925, figure as compared with 231 in June and 203 in July last year.

Shipments to the wholesale trade in July of manufacturers of replacement parts were 152% of January, 1925, as compared with 150 in June and 148 in July, 1928. Accessory shipments to the wholesale trade in June were 92%, as compared with 90 in June and 112 in July a year ago. Service equipment shipments, that is, repair shop equipment and tools of member companies in July were 170% as compared with 186 in June and 120 in July last year.

A record year is assured for manufacturers of original equipment, service parts and service equipment.

The Morgan & Wright Plant of the United States Rubber Company at Detroit, Mich., where all "U. S." tire production will be concentrated in the future

Huber Carbon Black Plant Is Opened at Borger, Tex.

THE first of the three units of the new carbon black plant of J. M. Huber, Inc., at Borger, Tex., was completed and put into operation on August 12. When the other two units are completed, the plant will cover 12 acres and will have 47 miles of seven- and eight-inch carbon collecting channels, with a burning capacity of 45 million cubic feet of gas per day.

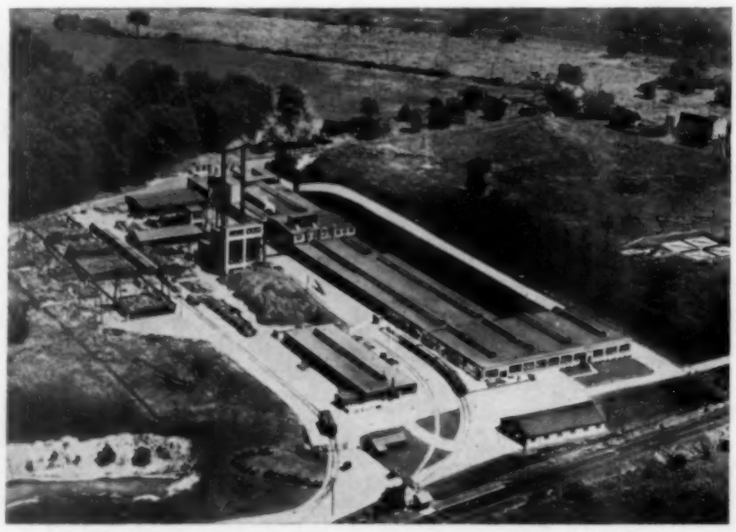
The Borger plant is the seventh Huber carbon black factory, other units being located at Swartz, La., Breckenridge, Tex., and Lance Creek, Wyo. In addition the company maintains a large factory at Brooklyn, N. Y., for the manufacture of C. P. dry colors, printing and rotogravure inks. News ink factories are located at Bayonne, N. J., and St. Louis, Mo. The company also operates clay mines at Graniteville and Langley, S. C.

United States Rubber Company Buys Dispersions Process, Inc.

THE United States Rubber Company has acquired the total share assets of Dispersions Process, Inc., by the issuance of 7,547 shares of its common stock for the outstanding shares of the latter company. At the current market value of United States Rubber Company stock, the purchase price represented by the exchange is slightly under $350,000.

The 7,547 new shares of United States Rubber common, which have been issued in exchange for the 38,000 outstanding of 75,000 authorized common shares and the total authorized issue of 8,000 preferred shares of Dispersions Process, Inc., were listed on the New York Stock Exchange last month.

The stock of Dispersions Process, Inc., is being acquired, it is stated, to assist in the retention of licensing arrangements now held with the company. Dispersions Process patents, considered valuable to the industry, relate to the aqueous dispersions of rubber in manufacturing goods of all kinds. The company itself was formed last year to acquire the assets of Research, Inc., and its subsidiary, the Aqua Rubber Company, Boston, Mass., owning the patents of William B. Pratt. Dispersions Process, Inc., has been operating in the Oaks, Pa., plant of the Philadelphia Rubber Works Company, a subsidiary of the B. F. Goodrich Company, and no statement has as yet been made regarding the future location of its activities or its personnel.



The Oaks, Pa., plant of the Philadelphia Rubber Works Company, where activities of Dispersions Process, Inc., have thus far been conducted

Rubber Goods Exports Total $42,570,200 for First Half

ALL records for exports of rubber products from the United States were broken during the first six months of 1929, according to the Department of Commerce. Total exports of rubber goods during that period were $42,570,200, as compared with $36,216,100 during the first half of 1928, an increase of 18 per cent.

All classes increased in both volume and value, especially automotive rubber goods and miscellaneous rubber wares. January showed a gain over the preceding month, and this continued until the peak was reached in March, after which a downward tendency set in. It is anticipated by the Department of Commerce that summer shipments will show a continued low level until fall exports to the southern hemisphere and the heavy footwear trade to the northern countries will bring about increased activity.

Exports of American automotive rubber goods increased 19 per cent from a value of $20,813,300 during the first six months of 1928 to $24,672,400 during the like period of 1929. The volume increase in general was much greater inasmuch as there was practically a universal decline in prices of all automotive rubber goods during the first half of 1929 through the repeal of the British restrictions on crude rubber exports from British Malaya and Ceylon.

Exports of solid tires declined 22 per cent in value, but this decrease was counteracted by a large advance in exports of truck and bus casings of 6 inches in size or larger. Exports of this class amounted to 157,465 units valued at $4,370,130 during the first half of 1929, and with their higher unit value they were responsible for the only comparatively slight decline in unit values of all classes of automobile casings from $12.61 to $12.06.

Heavy inroads were made by American exporters into the Spanish market with the results that Spain has become the leading customer for truck and bus casings 6 inches and over, taking 10,297 units valued at $436,575 in the first half of 1929. These shipments brought Spain into the position of America's second best outlet for casings of all types, although only seventh in rank in respect to casings other than the large pneumatics mentioned. Argentina continued to hold first place as a destination for casings other than those 6 inches and over as well as for casings of all classes combined. Aggregate shipments of all types to Argentina totaled $1,617,562, as compared with $1,062,349 to Spain, and $1,000,276 to Brazil. Argentina was also the principal market for au-

tomobile inner tubes and for other inner tubes and casings.

Exports of rubber boots and shoes increased heavily, as did shipments of canvas rubber-soled footwear. The value of rubber boots exported in the first half was $1,147,392 as against $881,810 in the same period last year, with the United Kingdom the chief customer. Rubber shoes exported were valued at $725,380 as against $695,208 in 1928, with Chile the principal market. Canvas rubber-soled shoes exported had a value of $2,451,393 as against $1,941,099 last year, with the Philippine Islands the leading destination. Shipments of rubber soles and heels declined in value.

Exports of rubber hose totaled $1,557,656, with Chile the leading market, and exports of rubber packing totaled $636,723, with Canada the principal customer. First half shipments were $1,548,069 for rubber belting and $262,639 for rubber and friction tape, with the United Kingdom the first destination for each.

Michelin Plans Factory In Los Angeles District

THAT the Michelin Tire Company, Milltown, N. J., will construct a branch tire and tube factory in the vicinity of Los Angeles, Cal., was stated last month by A. C. Cromwell, special factory representative of the firm who was sent to the Pacific coast to locate a suitable site. The New Jersey company is a subsidiary of the French Societe Michelin, which also has plants in France and England and is negotiating for the establishment of factories in South America.

"My mission on this trip," Mr. Cromwell declared on his arrival in the southern California city, "is to find a likely spot adjacent to Los Angeles for a factory site. Believing in the continuous prosperity and growth of this city, I deem it exceedingly advisable for the Michelin Tire Company to start operations here in manufacturing tires as soon as possible, and upon my return East I will advise my superior officials to this effect."

He has been making a thorough survey of the southern California territory during his visit, but no announcement has as yet been made of his recommendations for the actual plant site. The Michelin Tire Company was incorporated in 1907 and has been manufacturing casings and tubes at Milltown since that time. Tire factories are already being operated at Los Angeles by the Goodyear Tire & Rubber Company, the Samson Tire & Rubber Corporation, the B. F. Goodrich Company and the Firestone Tire & Rubber Company.

India Tire & Rubber Earns $245,034 During Six Months

EARNINGS for the India Tire & Rubber Company for the first six months of 1929 were the largest in any similar period of the company's history, totaling $245,034.36 after interest, federal income tax and other charges, equivalent to $2.72 a share on the 83,000 outstanding shares of common stock. Sales for the period totaled $2,544,501.

Prospects for a considerable expansion in the second half of the year are bright, according to W. G. Klauss, president. "India is constantly expanding and its products are now being sold in practically every country in the world," Mr. Klauss declared. "Over 15 per cent of our output goes to foreign trade. New accounts have been opened recently in China, Poland, Mexico, Austria, Spain and Palestine, and we have added 243 new dealers during the first half of this year.

"With replacement trade increasing during the touring season, India's sales are expected to gain considerably."

PLAN NOW

To Attend Rubber Division Meeting at Atlantic City

Reservations Should Be Made Promptly for Chemists' Sessions

FINAL arrangements have been completely taken care of for the session of the Rubber Division of the American Chemical Society at Atlantic City, N. J., on September 26 and 27, with the New York Rubber Group acting as hosts. The headquarters of the rubber chemists will be at the Chalfonte Haddon Hall hotel, and several items of entertainment are being prepared under the direction of W. B. Wiegand, chairman of the New York Rubber Group, in addition to the technical papers scheduled.

The committees which have been planning the details of the sessions have as chairmen the following: S. M. Cadwell, program; D. F. Cranor, hotel and transportation; Mrs. Cadwell, ladies' committee; W. H. Cope, boating; K. J. Soule, music; E. H. Grafton, registration; W. H. Cope, special treasurer; and W. L. Sturtevant, special liaison officer.

In a notice to the members of the Rubber Division, H. E. Simmons, secretary-treasurer of that body, urged the attendance of all at the coming meeting. "Through the efforts of our host," he stated, "we are to enjoy reduced railroad rates on the regular certificate plan, provided we have 150 members in attendance at the meeting holding these certificates for validation. This saving does not mean much to some of us who will travel only a short distance and, therefore, decide to drive, but it does mean considerable to some of our members who are compelled to go by rail; and yet the only way these will be allowed is that we have the number of certificates mentioned to be validated. Should we not, therefore, help the other fellow by deciding to go by rail and being sure to get our certificates when we procure our tickets?

"We will have two sessions for papers, one Thursday and one Friday morning. This makes it possible to devote the afternoon of these two days as one so desires when away from home and among friends. Bring your golf clubs. We have fine papers for these two sessions, which I am sure will bring out very helpful discussions."

Raybestos-Manhattan Merger Earns $3.10 Per Share in 6 Months

RAYBESTOS-MANHATTAN, Inc., the new corporation represented by the recent merger of the Manhattan Rubber Manufacturing Company, Raybestos Company and the United States Asbestos Company, reported for six months ended June 30, a consolidated net income of $2,098,530, after deducting all charges and federal taxes, or an equivalent of $3.10 per share on the 676,012 shares of common outstanding, the sole capitalization of the corporation.

In the first six months of 1928 the aggregate net income of the three companies without allowing for inter-company adjustments was approximately $1,286,000, equal to $1.90 a share on the capitalization of present merged company.

Consolidated income account for six months ended June 30, 1929, follows: Net sales, $12,215,847; costs and ex-

Program of the Rubber Section, National Safety Council

Monday Luncheon and Afternoon, September 30, 12:30 P. M. Chicago, Ill.

W. H. Fleming (Goodyear Tire & Rubber Company). *Why is the Foreman Responsible for Accidents?*

Discussion led by J. E. Lynch (Fisk Rubber Company). Garrett Burgess (Garrett Burgess, Inc.). *Power Safety and the Human Element.*

Tuesday, October 1

9:30 A. M.—T. P. Kearns (Ohio Industrial Commission). Address on safety.

10:15 A. M.—C. R. Peck (Protectoseal Company). *Handling Solvents in the Rubber Industry.*

11:00 A. M.—Discussion.

2:00 P. M.—M. A. Quirk (United States Rubber Company). General Chairman's Report.

2:30 P. M.—L. J. D. Healy (Fisk Rubber Company). *Health Hazards.*

3:00 P. M.—Verne Shaw (B. F. Goodrich Company). *Vulcanizers.*

3:30 P. M.—A. M. Williams (Chrysler Corporation). *Ten Minutes With the New Employe.*

4:00 P. M.—Discussion.

Wednesday, October 2

9:30 A.M.—Nominating, Engineering and Statistical Committee Reports.

10:00 A. M.—E. R. Lawler (United States Rubber Company). *Safety Kinks* (film strip).

10:30 A. M.—*What Our Eyes Have Seen During the Past Year.* Five-minute talks by P. B. Martens (Ohio Industrial Commission); E. W. Beck (United States Rubber Company); A. M. Dietz (Pennsylvania Rubber Company); and P. M. Wooden (Mansfield Tire & Rubber Company).

11:00 A. M.—S. Mansfield (Goodyear Tire & Rubber Company). *Safety at Goodyear, Yesterday and Today* (two films).

All sessions in private dining room No. 1, Stevens Hotel, Chicago, Ill.

penses, $9,676,258; operating profit, $2,539,589; other income, $172,163; total income, $2,711,752; depreciation, $312,719; federal taxes, $300,503; net income, $2,098,530; preferred dividends, $41,399; common dividends, $639,876; surplus, $1,417,255.

Consolidated balance sheet of Raybestos-Manhattan, Inc., and subsidiaries, as of June 30, 1929, follows:

Assets: Land, buildings, machinery and equipment, after depreciation, $7,448,013; trade-marks, goodwill, etc., $595,157; cash, $1,921,921; call loans, $800,000; U. S. government certificates of indebtedness, $199,437; municipal bonds, $200,000; marketable securities, $82,152; notes and trade acceptances receivable, $321,708; accounts receivable, $2,640,038; inventories, $4,569,125; investments and advances, $507,330; sundry accounts receivable, $136,575; deferred charges, $63,487; total, $19,484,943.

Liabilities: Capital stock, represented by 676,012 no-par shares, $9,721,800; accounts payable, $939,245; accrued federal and state taxes, $186,826; provision for federal and state taxes for 1929, $300,504; contingent reserves, $425,000; surplus, $7,911,568; total, $19,484,943.

General Tire & Rubber Plane First in National Air Race

FLYING the General Tire & Rubber Company's Lockheed racing plane, Lieutenant Henry J. Brown traveled the distance between Los Angeles and Cleveland in 13 hours and 18 minutes to win the National Air Derby and a prize of $5,000. Lee Schoenhair, piloting the B. F. Goodrich Company's test plane No. 3, christened "Miss Silvertown," made the flight in 13 hours and 51 minutes and was awarded the $2,500 second prize. Of the other two entrants in the race, Major John T. Wood crashed to his death on the deserts of California and Lieutenant Colonel Roscoe Turner finished the race but was disqualified because he failed to arrive between 1 and 6 P. M. as required by the rules.

The contestants in this event were free to make the race on different days, and Brown completed his flight on September 1, while Schoenhair flew the distance on August 26. Colonel Arthur Goebel, winner of the trans-Pacific Dole prize, O. C. Le Boutillier, and other well known flyers failed to start off in the Los Angeles to Cleveland non-stop contest.

Lieutenant Brown was employed by the General Tire & Rubber Company some time ago to pilot the firm's new flagship because of his excellent record as a "blind flyer" on airmail routes. He is a Clevelander and is vice-president of the National Air Pilots' Association. Brown has a long record behind him and is perhaps the only pilot who barnstormed himself to a college education. He attended the University of Illinois, the University of Washington, and the University of Chicago, receiving his bachelor of arts degree at the conclusion of a diversified college career from the University of Washington. For more than four yars he has been piloting air mail planes, recently having been employed on the Cleveland-New York route.

Intercontinental Rubber Loses $57,720 in First Half of 1929

FOR the six months ended June 30, 1929, the Intercontinental Rubber Company and subsidiaries report a net loss of $57,720, as compared with a net profit of $278,439 in the first half of 1928. During the last six months of 1928, following the shutting down of the guayule reduction plants and the curtailment of exports from Mexico, the company showed a loss of $88,091.

The consolidated balance sheet of the company shows total assets of $7,495,267, as compared with $7,714,952 a year previous. The principal reduction has been in inventories, which declined from $557,754 to $304,127, as of June 30, 1928. Land, buildings and equipment are carried at $4,716,225, and call loans amount to $2,000,000.

Of the consolidated liabilities, drafts and accounts payable totaled $104,888 and federal tax reserves amounted to $10,303. The remainder was represented by capital stock, surplus and various reserves.

The consolidated income account for the six months ended June 30, 1929, compares with similar periods of previous years as follows:

	1929	1928	1927	1926
Profit from operation	$117,695	$464,026	$576,507	$905,307
Expenses, ordinary taxes, etc.	103,415	77,588	85,983	127,340
Depreciation	72,000	69,999	65,500	73,000
Federal taxes	.....	38,000	58,970	92,900
Net loss	$57,720	*$278,439	*$366,054	*$612,067
Dividends	.....	148,814	297,279	592,207
Deficit	‡$57,720	†$129,625	†$68,775	†$19,860

*Net profit. †Surplus. ‡Includes estimated results of Sumatra Plantation for month of June only.

No. 2 of a Series of Articles on the

Uses of RUBBER in Modern Aircraft

Rubber in Airplane Landing Gears

By JOHN F. HARDECKER

Chief Draftsman. U. S. Navy Aircraft Factory, Philadelphia, Pa.

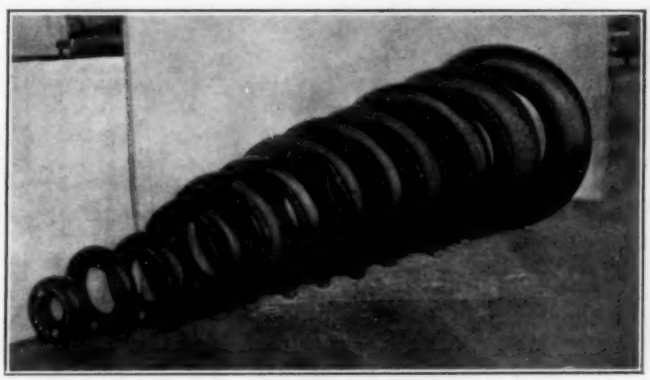
THERE is no more significant part of an airplane than the landing gear, which includes the landing gear proper and the tail skid or tail wheel. Here is the alpha and omega of all airplane flight, because without a successful take off and landing, no airplane flight can be commercially successful. True on a few occasions, on long distance stunt flights, landing gears have been dropped after take off to lessen the resistance and load, but this dependence upon crash landings is essentially a stunt, and has no proper place in commercial aviation.

In the all important landing gear rubber plays the leading role. On the airplane wheels and tail wheel we have rubber tires and tubes. Sometimes the wheels are faired with streamline shields of rubberized stockinette. Rubber shock absorber cord and rings are used for landing gears and tail skids. A more recent practice is to use rubber discs for the same purpose. Truly in this most essential part of an airplane rubber is the one material which cannot be dispensed with.

Airplane Tires

Airplane tires must be designed and manufactured to meet the high impact loads and stresses encounterd in airplane operation. In designing airplane tires, safety with minimum weight is the chief aim. Planes landing at high speeds on rough ground impose terrific shock loads on the tires, greater in degree than in any other type of service. The straight side tire is almost universally used.

The most important feature of a satisfactory automobile tire, namely, the heavy, long-wearing tread, makes this tire unsuitable for airplane use. This comparatively heavy tread, needed to deliver satisfactory miles on the automobile, is not only unnecessary in an airplane tire, where tread wear is a minor factor, but is undesirable due to its weight. However, in keeping the thickness of the tread to a minimum to keep within the weight limitation, it is important that the tread stock be high in tensile strength and resistance to abrasion. This is necessary due to the action produced by landing which starts rotation of the tire instantaneously from zero to as high as 750 R.P.M., causing an extreme scuffing action on the tread, as well as high tangential stresses.



A Range of Airplane Tire Sizes—"U. S." Royal Airplane Tires

It has been accepted practice, in view of the foregoing to use smooth tread tires for aeronautical use. With the advent of brakes on airplanes, there is a tendency to go toward some type of non skid tread, due to the effect of the braking action which causes slippage on smooth tread tires. This requires some study in order to provide an effective anti-skid surface in the shallow depth necessary for airplane operation, without unduly increasing the weight of the tire and without creating a tendency to throw mud when operating on wet landing fields.

Airplane tires cover a tremendous size range, from the 14x3 tail wheel to the 64x14 tire used on the Barling bomber. In between, there has been a demand for a multiplicity of sizes so great that steps toward standardization of

NOTE: *The first of this series of articles appeared in* THE RUBBER AGE *of August 10th. The next will be published in the issue of September 25th.*

requirements for the aircraft industry have been an absolute necessity. This work is now well under way, and the situation will be completely clarified in the near future.

In order to give some slight conception of the technical requirements for airplane tires, abstracted quotations will be given from the Army-Navy Master Specification for straight side pneumatic casings. This specification states that the casing shall consist of superimposed layers of rubberized cord fabric applied on a bias so that all plies have a uniform angle with reference to each other. These rubberized cord fabric layers shall be laid in such a manner that an equal number of plies shall run in each diagonal across the casing.

Courtesy of Johnson Airplane & Supply Co., Dayton, O.

Tail Wheel 14x3

The cord fabric shall be a standard cotton tire fabric and the staple shall not be less than 1 1/16 inches long. The material shall be made from the best quality fibre, Sea Island, Egyptian or equivalent. The compound used in frictioning and skim coating the cord fabric shall consist of at least 85 per cent by volume of best new plantation rubber, or its equivalent, suitably compounded and properly vulcanized to produce a compound which shall age well under reasonable service conditions. The tread shall consist of at least 70 per cent by volume of the best quality plantation rubber, or its equivalent, suitably compounded with gas black and other compounding ingredients and properly vulcanized to produce a compound which shall resist reasonable abrasion and cutting. This compound shall age well under service conditions. The organic acetone extract shall not exceed 10 per cent and the total sulplur shall not exceed 9 per cent of the weight of rubber as compounded.

The tread stock shall be extended to the bead to form the side wall. The side wall and tread shall have the following physical properties.

	Minimum
Tensile strength, pounds per square inch	3000
Elongation, per cent	500
Stretch, inches	2-12
Set, per cent	25

All beads shall be of the straight side type reinforced with steel wire. One chafing strip weighing not less than 14 ounces per square yard shall be used on each bead. All casings shall be furnished with an endless type flap whose width shall be equal to the width of the drop center portion of the rim. The edges of the flaps shall be tapered and the flap provided with a valve hole.

The construction and performance required of airplane tires are given in the following table:

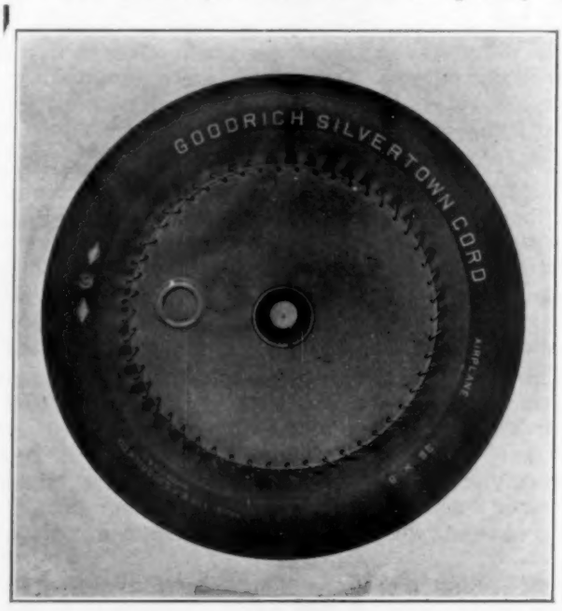
Size, Inches	Ply of Tire	Static Load for 27½ per cent Vertical deflection pounds (Min.)	Service Inflation Pressure Pounds	Bursting Pressure Pound per square inch	Bead Width toe to heel inches (Max.)	Wt. of Casing Pounds Max.
28x4	4	1000	50	150	5/8	9.0
30x5	4	1600	50	150	5/8	13.0
32x6	4	2200	55	165	5/8	18.0
36x8	6	4000	60	180	3/4	28.0
40x10	8	5500	65	195	1	48.0
44x10	8	6300	65	195	1 1/8	60.0
54x12	10	10000	70	210	1 1/4	90.0

The standard dimensions for airplane tires are given in the following table. The rim width corresponds to dimension A in the Rim Contour Table previously referred to.

Sttandard Dimensions for Airplane Tires

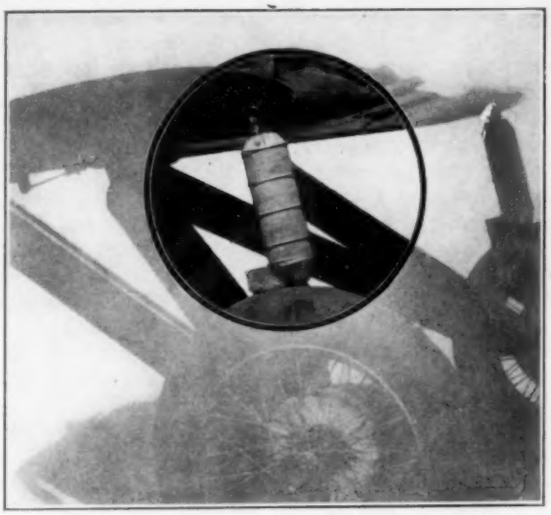
Tire Size	Rim Width	Inflated Sectional Width Min.	Inflated Sectional Width Max.	Inflated Outside Diameter Min.	Inflated Outside Diameter Max.	Air Press.
28x4	2.5	3.96	4.04	27.90	28.06	50
30x5	3.0	5.0	5.10	29.56	29.76	50
32x6	4.0	6.17	6.29	31.33	31.55	55
36x8	5.0	8.12	8.28	34.91	35.21	60
40x10	5.0	9.74	9.95	37.99	38.35	65
44x10	6.0	10.07	10.28	42.04	42.40	65
54x12	7.0	12.0	12.26	51.63	52.07	70

Proper air pressure at all times and under all service conditions is of utmost importance. Either extreme is detrimental to the service of the tire. Conclusive tests have shown that over-inflation, particularly in the larger sizes, reduced the resiliency of the tire to the point where carcass breaks may result from a hard landing on an uneven surface. Under-inflation, on the other hand, especially in the



Courtesy of The B. F. Goodrich Co.

Airplane Wheel Showing Streamline Shield



Courtesy of The B. F. Goodrich Co.

Rubber Shock Absorbing Discs on Airplane Landing Gear

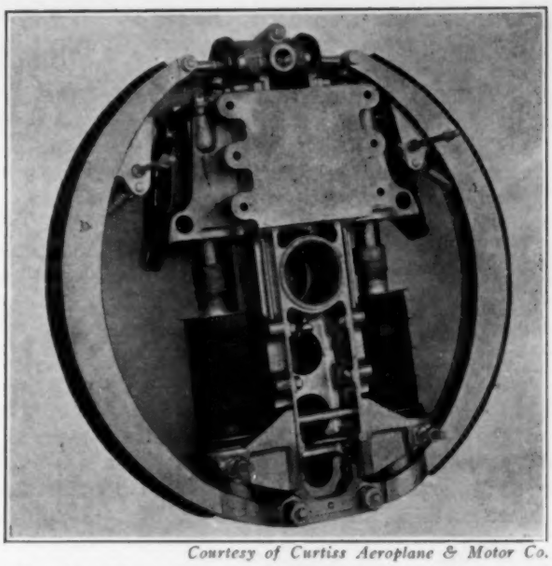
smaller sizes, may result in "rim bruises" due to extreme shock load, pushing the tire flat against the rim.

Airplane Inner Tubes

Airplane tubes must be designed to provide the maximum in resistance to tear, tensile strength and elasticity and minimum air loss, with a pure gum stock of low specific gravity to keep the weight to a minimum. The lowest practical percentage of stretch and the proper fit of the tube into the casing and rim well are also extremely significant.

The tentative Army-Navy Master specification for inner tubes specifies that they shall be of the endless type, and made from the best quality washed and dried plantation rubber, and that no reclaimed rubber, oil substitute or any material which shall tend to decrease the life of the tube shall be used. The analytical and physical properties for inner tubes are shown in table 1, and the dimensions and weights in Table 2.

The splice shall be as strong as the body of the tube. The spliced ends shall be properly skived so as to avoid an abrupt or unnecessary increase in the thickness of the tube at the splices. All tubes of 5 inches in diameter and larger sizes shall be vulcanized to a ring shape.



Courtesy of Curtiss Aeroplane & Motor Co.

Curtiss Oleo Wheel with both brake and entire shock absorbing unit enclosed in wheel—Note use of rubber discs

Streamline Airplane Wheel Shields

These farings, made of rubberized stockinette with fabric reinforcement around the edges are laced through grommets to the skirt of the tire. The skirts on the tires are vulcanized to the tire side walls at the greatest cross sectional point, so that when the windshield and skirt are laced together and the tire inflated the shield is held taut.

These shields pay for their cost in just a few hundred miles of flying. On two 30x5 tires carried at a speed of one hundred miles per hour streamline shields save approximately 3¼ horsepower in reduced wind resistance. They are made in all sizes, with removable valve hole covers and with center holes for all sizes of hubs and brake drums.

Tail Wheel Tires and Tubes

With the establishment of permanent, well-attended flying fields and the advent of braking devices on landing gear, the tail wheel is gradually replacing the skid in modern airplane construction. Present day fields are being designed with an eye for beauty; and the newer planes are coming into use with hydraulic brakes, individually operated, so that one or both wheels may be released in ground steering,

Inner Tubes—Table 1

Type	Class	Rubber by Volume Min. Per Cent	Organic Acetone Extract Max.* Per Cent	Total Sulphur Max.* Per Cent	(Gypsum) $CaSO_4 2H_2O$ Max. Per Cent	Tensile Strength Min. Lbs. per Square in.	Ultimate Elongation Min. Per Cent	Set Stretch 1 to 6 Inches Max.
Pure Gum	A	93	5.0	7.0		1800	750	10
Antimony	**B	85	5.0	7.0	7.0	2000	725	10
Compound	C	80	5.0	7.0		2500	600	15

*Based on the weight of rubber as compounded.
**This class of tubes shall be compounded only of rubber and antimony sulphide.

Inner Tubes—Table 2

Tube Size inches	Min. Thick. inches	Max. Wght. pounds	Tube Length inches	Recommended Pole Dia., inches
28x 4	0.060	2.0	*35.0— 35.25	2½ straight
30x 5	0.060	2.5	**63.5— 64.5	3½ curved
32x 6	0.065	3.0	**64.5— 65.5	4¼ curved
36x 8	0.070	5.0	**65.0— 66.0	5¼ curved
40x10	0.090	8.0	**70.5— 71.5	7¼ curved
44x10	0.090	11.5	**79.0— 80.0	7¼ curved
54x12	0.115	16.75	123.0—125.0	8¾ curved

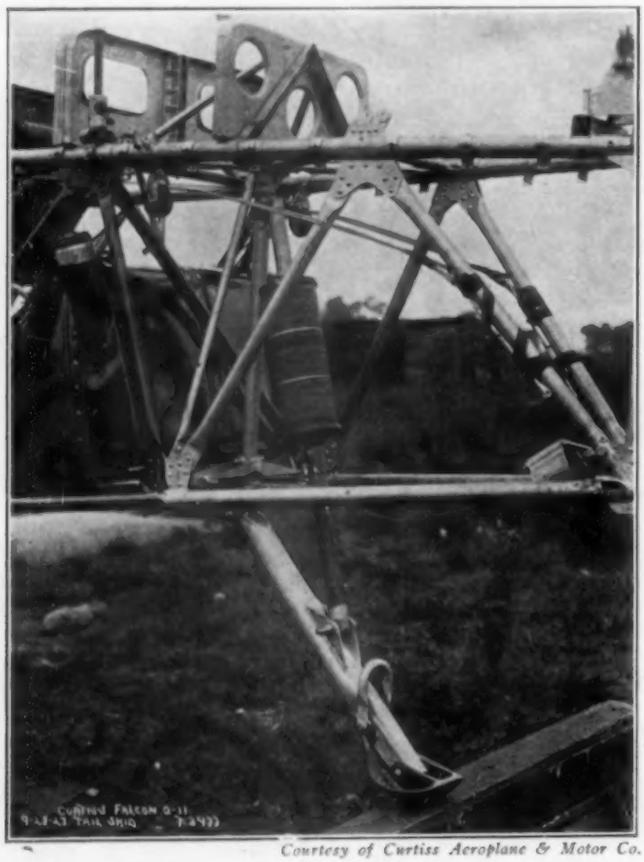
*Length of 28x4 on straight mandrel is measured on the deflated tube as a flat length, and is one half the true tube length.
**These dimensions are the inside circumference of the tubes which are made on circular mandrels and cannot be measured flat. This dimension is obtained when the tube is inflated to 1¼ pounds pressure. The correct pressure is best obtained when the valve core is removed and the valve connected to a mercury-filled manometer.

on taxi work or when landing. The tail skid is very damaging to field surfaces, and its general replacement by the tail wheel is certain. The pneumatic tire offers the best solution to the tail wheel problem; it lessens the landing shock of the fuselage, permits of easy maneuverability of the plane in taxiing and preserves the surface of the landing field, especially in wet weather.

Tail wheel tires are generally used in the following sizes, 10x3, 14x3, 16x4, and 18x3. For extra large planes the 20x4 tire is also used for tail wheels. Tail wheel tires and tubes must be built with the same exacting care as the tires of larger size. Extreme lightness and ability to withstand sudden shocks and twisting strains are prerequisites of tail wheel tires.

Shock Absorber Cord

Shock absorber cord is used for the flexible attachment of landing gear and tail skid to the airplane frame. The highest quality rubber thread is covered with a woven jacket of specially treated cord. Great tension and elongation are



Courtesy of Curtiss Aeroplane & Motor Co.

Use of Rubber Disc Shock Absorbers on Tail Skid of Curtiss Falcon Plane

obtained by weaving the jacket upon the threads while stretched. The sizes used are ⅜, ½ and ⅝ inches diameter. As heat accelerates the ageing of rubber under tension, ⅝ inch cord is often installed during the summer where ½ inch cord is used during the cooler season. The cord is also used in the form of rings, which are especially adapted to split type landing gears and tail skids.

An indication of the detail requirements for this material may be gleaned from the Navy specification covering elastic cord for shock absorbers. This specification states the cord shall be made of multiple strands of rubber, tightly incased within two layers of cotton braid. The rubber strands shall be made from and have the characteristics of a compound containing at least 95 per cent, by volume of the best quality wild or plantation rubber, free from oil substitutes. The organic acetone reaction shall not exceed 4 per cent and the total sulphur 7 per cent, based on the percentage of rubber, by weight, as compounded. The non volatile ash shall not exceed 5 per cent of the weight of the compound.

The rubber strans shall be square, varying in cross section between .05 and .035 inches. The inner braid shall consist of white or natural threads, 12/3 ply or 10/3 ply or equivalent with a soft finish. Single threads shall have a tensile strength of 3½ pounds for 12/3 ply and 4 pounds for 10/3 ply. The outer braid shall consist of white or natural threads 12/3 ply or 10/3 ply or equivalent with a hard finish. Single threads shall have a tensile strength of 4½ pounds for 12/3 ply and 5 pounds for 10/3 ply. The strands shall be thoroughly treated with soapstone or talc to prevent them from adhering to each other in the finished cord.

The threads in the braid, and the load for 100 per cent extension are as follows:

Size of cord (inches)	Number of inner threads	Number of outer threads	Wood (pounds)
⅜	24-48	40-60	90-150
½	32-48	60-80	175-250
⅝	48-72	60-80	250-350

The extension in 2 inches of rubber strand at breaking load shall not be less than 100%.

Shock Absorber Discs

There has been a growing application of rubber discs for shock absorbing purposes in airplane landing gears and tail skids. In the landing gear the design may be such that the discs are concealed within the fuselage or even in the wheel itself. These discs are either molded or lathe cut and ground from hand made tubing. Soft, medium and hard compounds are used, so that various degrees of resiliency may be determined by combining discs. Metal spacers are also inserted on occasion between the rubber discs to establish greater compactness at intervals. The sizes used at present vary greatly, ultimately standardizations will undoubtedly reduce these to a reasonable range of stock sizes.

In the oleo wheel we have the first occasion that hydraulic wheel brakes and shock absorbers have been placed wholly within the landing wheels. The shock absorbing medium is a combination two cylinder oleo and rubber disc type, providing smooth and easy action with no tendency to rebound. The wheel is of the disc type, with the hydraulically operated brake shoes bearing on the inner surface of the wheel rim.

June Tire Output Shows Decrease

PRODUCTION of pneumatic casings of all types by tire manufacturers in the United States fell off during June to 7,303,695, according to statistics compiled by the Rubber Manufacturers Association, Inc. Although shipments were a trifle higher than in May, they were still below production and inventories.

The figures for June, as released by the Rubber Manufacturers Association, Inc., represent 75 per cent of the industry in the United States and have been brought up to represent 100 per cent in the following table:

TIRE AND TUBE PRODUCTION
(All Figures Represent Thousands)

	May, 1929			June, 1929		
Pneumatic Casings:	Prod.	Ship.	Invent.	Prod.	Ship.	Invent.
All types	8,145	7,184	17,849	7,304	7,254	17,957
Balloon	6,310	5,364	12,063	5,631	5,106	12,629
High Pressure Cord	1,829	1,809	5,714	1,666	2,126	5,276
High Pressure Fabric	6	12	71	6	23	52
Solid and Cushion Tires	53	57	178	53	54	176
Inner Tubes:						
All types	7,660	7,038	18,928	6,978	6,950	18,741
Balloon	6,115	5,060	12,223	5,399	4,681	12,873
High Pressure	1,540	1,973	6,689	1,570	2,265	5,845

Toxic Substances *in the* Rubber Industry

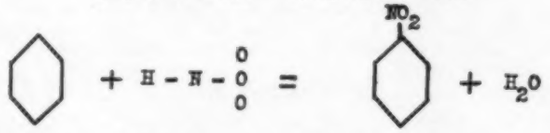
PART III

By P. A. DAVIS, A.B., M.A., M.D.
Assistant Medical Director, Goodyear Tire & Rubber Company

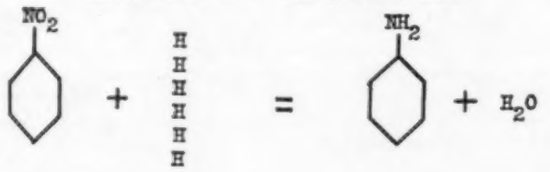
ANILINE $C_6H_5NH_2$

THIS discussion while of supreme importance to the rubber industry is also very important to the shoe, dye and chemical manufacturing industries. Aniline is an amido-derivative of Benzol, and is called a primary amide. Its preparation is by amidization of nitro-benzol.

$$C_6H_6 + HNO_3 = C_6H_5NO_2 + H_2O$$



$$C_6H_5HO_2 + H = C_6H_5NH_2 + H_2O$$



NITRO-BENZOL ANILINE

The most common commercial method of preparation is by treating pure nitro-benzol with hydrochloric acid and iron filings. The product from this method when purified is a colorless, volatile oil, very unstable and when exposed to the light and air, changes color to a dark brown and on further oxidation, to a black mixture with a residue. The commercial products are contaminated by various percentages of nitro-benzol, di-methylaniline and its nitrose bodies.

Some authorities claim that pure aniline does not produce poisoning, but that the effects produced are due to a mixture of amido-benzene Metatouidine, para-toluidine, ortha-toliudine and xylidine. My observations point to a different conclusion and they are in accord with those of Dr. Alice Hamilton and K. B. Lehman.

Small quantities of 0.1 to 0.25 gm may when inhaled produce very toxic effects. The action of aniline is very quick and without pain. The individual may suddenly become blue and cyanotic before he realizes what is happening. It is a cyanosis due to the prevention of oxygenization of the blood by aniline and not to any cardiac or pulmonary difficulty.

The absorption of aniline oil by the skin is very great, much more so than most all other liquid compounds used in the industry. Aniline oil spilled on clothes has often produced very acute symptoms. The absorption through the respiratory tract is next in importance. Aniline oil is very volatile and in nearly all processes it is used where the temperature is high enough to produce volitalization. In closed tanks or reaction basins where nitro-benzol is used in the production of aniline, a certain residue is produced which adheres to the walls of the tanks and must be removed at intervals. This is usually done by steaming and later by chipping the residue. This requires men to go into the tank and great caution should be exercised as often aniline vapors gravitate to the bottom of the tanks and the workers become very cyanotic and must be removed at once.

Absorption by the alimentary system is in most cases very slight and is a more or less controllable one. This can be controlled largely by education and instructions concerning the cleanliness during eating and drinking.

Absorption by all three methods produce a very quick and culimative type of analism which must be given heroic treatment in order to prevent coma and death.

The absorption of aniline or derivatives produce the following symptoms. The symptoms will be noted in their order of appearance as an average for many cases.

1. Slightly insomnia or drowsy feeling.
2. Neuro-vascular symptoms; Flushed face, weariness and mental uncertainty in extreme cases and in some cases an irritable disposition.
3. Headache, dizziness and nausea.
4. Beginning cyanosis—chilliness or cold feeling.
5. Rapid and weak pulse, gradually becoming slower with decreased blood pressure.
6. Loss of appetite, indigestion.
7. Irregularity in breathing.
8. Dryness and choking sensation in the throat, burning and stinging sensation of eyelids.
9. Joint pains, muscle pains.
10. Spots before the eyes.
11. Hematuria—rare cases.
12. Painful urination in extreme cases—Hyperacidity.
13. Constipation or diarrhea.
14. Skin eruptions—macular—rare cases.
15. Difficulty in talking with loss of memory.
16. Very deep cyanosis and then unconsciousness.

All patients do not present every symptom, but they may have had them at some time. The marked pallor of the skin, cyanosis of lips, and the history of the work together with a characteristic odor which is usually present should not cause one to hesitate about the diagnosis.

Types React Differently

There is a class of men who work in aniline who seem to develop a tolerance for aniline, in that they remain cyanotic for years without any apparent serious conditions developing and when changed to other jobs clear up very nicely, their blood and urine returning to normal. These cases of course have some blood changes but they do not complain except for a slight tired feeling at the end of the day's work. The body attempts to maintain an equilibrium between intake and output of aniline, but the extra amount which is absorbed by the blood causes a very marked cyanotic condition, due to deficient internal respiration and formation of methemoglobin.

The primary effects of aniline begin with oxygen suffocation or a deficient internal respiration. If this is corrected at once the human organism returns to normal within a short time, if not then very serious changes may take place. Blood Changes: Principally those of deficient internal respiration—Disappearance of hemoglobin with the formation of methemoglobin.

Decrease in the red blood cells with anisocytosis and poiklocytosis. With very acute cases there may be a slight leukocytosis

with basophilic degeneration, this returning to normal and in some cases to a slight leucopenia on the removal of the individual from contact with aniline or its derivatives. Polymorpho-nuclears decreased with a corresponding increase in small lymphocytes, slight eosinophilia in some cases. In very severe cases some embryonic forms of red cells appear.

The hemoglobin (Sahli's method) is decreased, with considerable formation of blood dust. Talquist scale is of no use, for as soon as the methemoglobin is exposed the color is changed. The coagubility of the blood is decreased, also the viscosity.

Several years ago, I reported the results of examinations of 100 cases of aniline absorption with special references to the blood and urinary findings. Since that time many more examinations have been made and while the facts reported at that time remain the same, some additional information has been gained.

Urinary Findings: After examining several hundred urines from cases ranging from those which have very marked symptoms to those who have had persistent symptoms I am of the opinion that there is no definite course to follow for no definite set of urinary findings can be formulated. Luce and Hamilton were unable to arrive at any definite conclusion. The following things were tested for:

1. Specific Gravity—varies from 1005 to 1030.
2. Reaction—usually acid—containing a large amount of uric acid.
3. Albumen—negative except in those cases where extreme anemia, an irritative nephrites or cystitis had developed.
4. Sugar—did not find any trace.
5. Aniline or Aniline radicals—negative except in rare cases.
6. Phenol—Negative as such but in combination as para-amido-phenol sulphuric ester and amido-2-nitro phenol.
7. Acetone—Negative.
8. Di-acetic acid—Negative except in severe cases.
9. Nearly all cases show traces of hematin when 24 hour specimens are evaporated.

Microscopic: Large quantities of uric acid crystals, urates, oxalates, sulphuric esters and amido-bodies.

There is no set rule for urinary findings, except in most severe cases, hematin can be found if large quantities can be used, presumably due to blood cell destruction.

Prevention

1. Education and instruction for employees working in aniline.
2. Proper ventilation.
3. Handling of aniline compounds in closed receptacles.
4. Restricted time for working in the fumes of aniline.
5. Better personal hygiene.
6. Wooden shoes should be worn where the floors are wet in aniline production plants.
7. Immediate bath if aniline or any of its derivatives are spilled on clothes or skin. Use vinegar or 3% acetic acid followed by water. Some employers furnish milk for the employees to drink, but I see no advantage in this, rather the opposite, for milk is constipating and we thus block one of the channels of excretion.

One large manufacturing company gives its aniline workers a teaspoonful of vinegar (acetic acid) before going to work with the idea of producing soluble aniline compounds which facilitates excretion by the kidneys. I have used lemonade containing Epsom salts so that in a day the average worker gets enough citric acid and salts to increase catharsis and diuresis. Very good results have been obtained. The following formula was used:

Oranges, ½ to 1 doz.
Lemons, 2 to 2½ doz.
Sugar to taste
Water, 8 gal.
Sat Sol Epsom Salts, 16 oz.
Serve cold.

To control the number of cases means proper ventilation, cooperation with the workmen and highly developed personal hygiene with the institution of shower baths.

Treatment

The treatment is one for internal suffocation and acidosis. The cases vary from very mild ones which need free elimination and open air to those who need artificial respiration with injections of heart stimulants and blood transfusion.

Remove patient to open air, loosen clothes and examine for any source of absorption on the clothes. The clothes should be removed as they are probably saturated with aniline fumes. Give oxygen inhalation if necessary and a vinegar bath to dissolve aniline from the skin pores, after first removing excess of aniline by soap and water. Use heart stimulants as caffine, camphorated oil, ether, but no tinctures on account of their alcohol content which should be abstained from. Enema of soap suds and glucose (2-3 oz.) may be given. If patient is conscious give glucose 1 oz. in water, alkalinized with sodium bicarbonate. Blood letting may be necessary with transfusion or possibly infusion of normal saline. Lavage of the stomach has been resorted to but the shock of this operation seems to be more hazardous that any good results produced from it. Free diuresis, catharsis and sweating with treatment of symptoms as they arrive.

Complications

1. In alcoholics a predisposition to glomerular nephritis.
2. Secondary anemia which is very difficult to clear up.
3. In severe cases an irritative cystitis often develops.
4. Inhibition of the red cells forming organs which under change of environment gradually return to normal.
5. Several cases of gastric involvement have been reported by German authors, especially gastric ulcers. I have never seen a case of gastric ulcer develop in which aniline was the cause. One case I know of in which the worker claimed it was due to aniline but investigation proved he had been exposed to very little aniline and only over a period of a few minutes. It is possible that such a condition could develop in Germany as the working conditions are very poor, but I know of no case which has been produced in this country.
6. Eczematous skin rashes especially on the covered parts, scrotum, arm pits and inguinal regions.
   Occasionally we see a pustular eruption resembling a furunculosis. Examination of pus from one of these furuncles shows—Staphlo and Strepto—Coccus.

Conclusions

It is advisable to have all persons working in aniline examined at frequent intervals and a record made. The individual who has charge of aniline workers should be instructed concerning the conditions present and report any cases that seem to be showing symptoms. All aniline workers should have short periods to work and longer ones in the open air, and abstain from alcohol which seems to predispose to aniline absorption more so in young men. The blood protective system is inhibited from forming anti-bodies. Phagocytosis is inhibited and secondary infections very readily develop.

Preventive measures should be instituted in preference to after treatment.

Aniline and its immediate homologues are a blood and nerve poison, producing its effects by internal suffocation.

Destruction and hemolysis of red blood cells and marked production of methemoglobin. Acidosis is produced in severe cases. Very little effect on the white blood cells except transitory leucocytosis in the beginning of acute cases with slight basophilic degeneration.

Very few complications develop except in very severe cases, then there are degenerative changes in kidneys, liver, heart and pulmonary oedema.

Alcohol seems to be a predisposing factor for early symptoms.

Decrease in the protective power of the blood, with a low coagulation time and subsequent hemorrhages.

La Souchere Plantation for Sale

THE La Souchere rubber plantation in French Indo-China is being offered for sale and a number of financial interests have been approached with the idea of securing it as an American project. The property is located near the port of Saigon and covers a territory of 8,892 acres, of which 2,717 acres are planted in rubber (*Hevea*).

The company operating the property is a French corporation capitalized at 13,000,000 francs, of which Madame La Souchere in Paris owns a majority of the shares of stock. The stock is traded in at present on the Paris Bourse. It is said that the buildings and equipment are in good condition and of modern design.

Leon Spinak, 1432 South Union Avenue, Los Angeles, Cal., is representing the La Souchere interests.

Developments *in a* New Process *of* VULCANIZING RUBBER GOODS

By HENRY R. MINOR

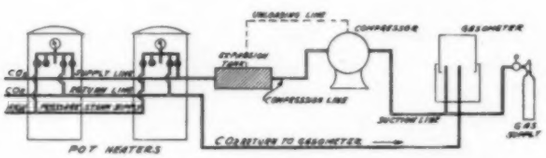
The Liquid Carbonic Corporation, Chicago, Ill.

A PRACTICAL means has been recently developed which permits obtaining any temperature at any desired pressure, a means which is applicable not only to the curing of tires and molded tubes but to the curing of boots and shoes and other rubber products where curing has hitherto been accomplished in hot air or open steam.

The new process consists in first bringing up a part of the pressure to a pre-determined point, preferably with an inert gas such as CO_2, then shutting off the gas and turning on the steam at the curing pressure, and leaving it on throughout the period of cure.

The first effect on the steam is to heat up the inert gas, causing it to expand, thus cutting down the partial pressure of steam that can enter the bag, thereby insuring any desired temperature which may be easily computed for any particular case. The inert gas not only acts as a preservative for the inner surface of the air bag or molded tube, preventing oxidation, but also acts as an automatic valve controlling the number of heat units which may be added.

Temperature equilibrium is obtained in a few minutes and remains substantially constant thereafter. The reason for this is



PLAN SHOWING METHOD OF CURING TIRES BY MEANS OF CO_2 GAS AND STEAM WITH RECOVERY OF GAS FOR RE-USE

obvious. As the steam within the bag condenses on the inner surface, the temperature, and hence the partial pressure of CO_2, is lowered, increasing thereby the partial pressure of the steam which may enter the bag and restoring the desired temperature. In practice, of course, this operation is smooth and continuous, there always being a flow of steam into the bag or molded tube proportionate to the heat units transferred.

In the use of this process it is only necessary to have two supply lines, one for the gas at a pressure equal to the partial pressure that may be used, approximately one hundred pounds, and another for steam at curing pressure. With this combination, by varying gauge pressure of the gas at the heater and using steam at the pressure in the line, it is possible to have any desired temperature variation at individual heaters independent of the others.

Flexibility

Simple in its operation, the flexibility of the process is one of its greatest advantages. Hitherto curing operations have been conducted with fixed external and internal temperatures, the variations in the thickness of the products to be cured being taken care of by compounding and time of cure, it being impractical in the hot water process to provide supply lines of hot water at different temperatures.

In this new process the rate of heat transfer is at all times under control of the operator, for he only has to vary gauge pressure on the first gas supplied in order to secure any desired temperature and, hence, a marked change in the rate of heat transfer. This then means that there need be less compounding, with the ultimate goal of unit compounding for all size tires.

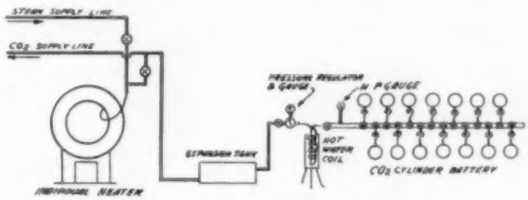
Limited by set external and internal temperatures, it has not heretofore been possible to secure the optimum cure at the critical points of the tire. In this process, by merely varying internal temperature, it is practical to bring the point of equilibrium of heat flow at any point desired in the tire, and to implant the desired amount of heat at the desired points without over-curing or under-curing. As a result of this, as well as because of the increased rate of heat transfer, it should be practical to equal laboratory results in production.

Elimination of Variables

The extent to which compounding may be eliminated removes an important variable in the manufacturing processes; always necessary to insure that the particular batch milled is used at the place intended, the cost of such insurance is reduced.

Variations in bag thicknesses and gauge of tires or molded tubes, which cause, under present conditions, a pronounced change in the point at which the temperature line intersects the curing line, are of less importance in this process because of the fact that the temperature gradient is at a much steeper angle and consequently strikes the curing line at a much earlier period in the cure.

In this process there is no leakage of air or gas into the heater. Whatever leakage takes place must necessarily be of high pressure steam. The elimination of air from the heater constitutes the elimination of a variable which in the air-dope process has been a prolific



PLAN SHOWING METHOD OF CURING MOLDED TUBES WITH CO_2 GAS AND STEAM

source of variation in cures obtained. Not only does air vary in the amount of leakage from cure to cure, with consequent change in rates of heat transfer, but tires in the bottom of the heater will generally be found slightly under-cured, and those in the top of the heater slightly over-cured, because of the settlement of air on the bottom of the heater. Mechanical aids for overcoming this difficulty are but added burdens, at best.

Condensation within the bag or molded tube is an unimportant factor in this process. Small in amount, it is kept in continuous motion throughout the cure by the constant in-flow of steam and what condensation exists is substantially removed when pressure is released from the bag or tube, so that the bags or tubes are substantially dry. Compared with the hot water process, this is a most important factor, for one of the major difficulties in the use of the hot water process has always been the fact that a variable amount

of water remained in the bag at a temperature different from that of the entering hot water, and in order to remove the hot water the collapsing of the bag was necessarily detrimental to the life of the bag itself.

All of the theoretical benefits of circulating hot water are obtained without the expense connected with the purchase, installation, and maintenance of an extra air bag valve. Neither is there present the disturbing thought that with two valves most of the circulation may be on one side. In this process temperature conditions are maintained uniformly.

Molded Tubes

It is not surprising that a process as flexible as this, and which lends itself so readily to the curing of tires, should be equally applicable to the curing of molded tubes. Tests have established that it is practical to reduce the curing time 50% by the application of this process where the heat is applied from two sides, although it is debatable whether or not the saving thereby effected might not be made even more satisfactory by using a more stable and longer curing stock and curing in the same time as at present, thereby eliminating present losses in the mill-room due to scorching and the necessity for rapid cooling.

The surety that the patch on the inside of the tube is cured up by reason of the application of heat on both sides is a distinct advantage. Tubes cured from two sides should be more heat resistant. Tubes cured with CO_2, and particularly with CO_2 and steam, have age-resisting qualities, increased tensile, and have a superior superficial appearance. Perhaps the most interesting phase of the application of this process to molded tubes lies in the possibilities which it presents for continuous curing operations.

It having been shown that the same degree of heat is commercially applicable for internal curing as has been hitherto used for external curing, it follows that curing may be entirely internal, it only being necessary to provide externally the same degree of insulation as has hitherto been used internally. Obviously, if expensive double-jacketed heaters are unnecessary and small thin insulated molds may be used, then not only are enormous savings in equipment costs possible, but continuous curing operations become practical. Much work has been done along this line and many tests conducted, but to go into this phase at this time would make a story in itself.

Chart No. 1 shows comparative effectiveness of this process compared with the air-dope process. This chart is not reproduced for the purpose of showing ideal conditions but simply is typical of early results obtained. Table No. 1 is a characteristic thermocouple tabulation showing uniform conditions obtained in both top and bottom bags in a pot heater. Noted that the savings of value which may be attributed to intangible factors such as ability to obtain optimum cure at the critical points in the tire and the monetary

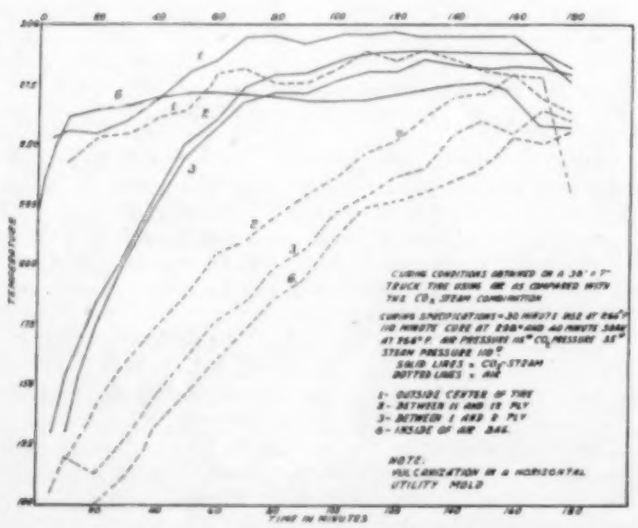


Figure I

Table I

Tests on 30x4.50—6 Ply

CO_2 AT 89#—STEAM AT 175#—EXTERNAL TEMPERATURE 289°

	BOTTOM TIRE			TOP TIRE		
Time	*Under Tread*	*6 Ply*	*1st Ply*	*Under Tread*	*6 Ply*	*1st Ply*
1.19	83	82	82	82	82	82
1.24½	Steam up to pressure					
1.27½	238	212	194	243	216	200
1.35	266	247	236	264	248	236
1.42½	275	265	255	274	263	255
1.50	280	271	263	280	272	263
1.57½	282	276	268	283	277	270

savings accomplished through reduction of the number of compounds are not included because of inability to place a definite value upon them, even though these considerations may be greater than all the others combined, through its elimination of variables and effect upon the quality of the products.

Conclusion

In conclusion, it may be said that the new process is simple to operate, inexpensive to install and costs less to use than present methods.

A reduction in curing time of from 25% to 50% is effected, increasing the capacity of present equipment without additional expenditures, for molds, heaters, etc.

Savings of from 5c to 10c per tire are noted, plus the additional values resulting from elimination of variables, the securing of the optimum cure at the critical points of the tire, with consequent improved quality of product.

In its application to the curing of molded tubes, it is shown that improved quality may be obtained together with reduction in cost and important developments in curing equipment are indicated.

The Electric-Gasoline Auto

A NEW type pleasure automobile with no clutch or gears to shift, and capable of quick pick-up and fast speed on the hills, a combination 60-horsepower gasoline and electric car, has just been delivered to Colonel E. H. R. Green, son of the late Hetty Green, at his South Dartmouth, Massachusetts, estate. It is the first auto of its kind ever built, and is the result of combined experimental work by engineers of the General Electric Company and the Rauch and Lang Corporation of Chicopee Falls, Massachusetts.

In external appearances it looks just like any gasoline driven car. The real difference is in the mechanism under the floor boards and controls at the driver's seat. There are but two foot pedals, the one to the left for the brake and the one to the right for the gas. The clutch pedal and the gear shift rod, or lever, to the right of the driver in ordinary cars, are eliminated.

In addition to the absence of the clutch and gear shift, other features of the new car are that it is impossible to stall the engine without actually shutting off the ignition and it is impossible to start with a jerk. Even though the accelerator pedal is jammed down to the floor board, the pick-up will be gradual and smooth because of the automatic electric equipment.

The electric generator is mounted directly to the fly wheel housing of the gas engine, the generator armature revolving at exactly the same speed that the engine turns over. A few inches back on the generator, or approximately under the front seat, is the electric motor, connected by cable to the generator and coupled by a short drive shaft to the rear axle. As the generator is speeded up, more electricity is fed to the motor, and as the motor picks up so does the speed of the car.

Rubber Manufacturing Industry Records Its Greatest Half Year

Sales Value of Shipments in First Six Months of 1929 Totals $586,886,000, While Consumption of Crude Rubber Reaches Record Breaking Peak of Nearly 270,000 Long Tons

HOW greatly the extent of operations in the American rubber industry has increased during the present year is shown concretely in the complete statistical reports of the Rubber Manufacturers Association, Inc., compiled from answers to its questionnaire for the months of April, May and June. Not only was more crude rubber consumed by domestic factories than in any previous quarter in the history of the industry, but sales value of factory shipments was at a high level despite lowered prices of manufactured products. The combined first and second quarters of 1929 marked the greatest half year for volume of production that the industry has ever seen.

The actual value of all shipments of manufactured rubber products during the period totaled $312,863,000, as compared with $274,050,000 in the first quarter of 1929 and $296,218,000 in the second quarter of 1928. Tires, tubes and tire repair materials, as usual, comprised the greater part of the total sales value of all rubber goods. The value of these items alone reached a figure of $218,341,000, as against $94,522,000 for all other rubber products combined. Marked gains were made, however, in the amount and value of other rubber lines, such as mechanical goods, footwear, bathing apparel, rubber clothing, automobile fabrics, heels and soles, rubber flooring, and sporting goods, toys and novelties.

In amount of crude rubber used, tires, tubes and tire repair materials absorbed 120,726 long tons out of a total of 139,292 long tons consumed by the entire industry in the second quarter, both figures being new high records. Consumption of reclaimed rubber was slightly larger than production, the association estimates. According to its questionnaire figures, consumption in April, May and June totaled 62,297 long tons while production was 62,107 long tons.

Combined figures for the first six months of 1929 show a total value of all rubber goods shipments of $586,886,000, as compared with a total of $575,486,000 during the first half of 1928. In the first half of this year, consumption of crude rubber reached the record breaking total of 267,857 long tons, as against only 207,058 long tons in the period from January to June, 1928.

The figures presented in the table below are estimated by the Rubber Manufacturers Association to represent 92 per cent of the American manufacturing industry, but those quoted in this article have been raised so as to represent 100 per cent of the domestic industry.

Comparative Table of Value of Rubber Goods Shipped from Manufacturing Plants and the Amount of Crude Rubber Consumed for the Last Five Quarters

Total Value of Manufactured Rubber Products Shipped

Thousands (,000) omitted.

	Product	2Q-29	1Q-29	4Q-28	3Q-28	2Q-28
	Tires and Tire Sundries					
1	Auto and Truck Casings	$165,571	141,240	128,521	190,986	159,410
2	Auto and Truck Tubes	24,011	20,558	18,480	29,755	23,640
3	Motorcycle Casings and Tubes	426	318	334	585	463
4	Bicycle Casings and Tubes	785	584	867	813	604
5	Aeroplane Casings and Tubes	144	147	76	118	71
6	Solid and Cushion Tires	5,049	4,253	4,862	7,219	6,456
7	All other Solid Tires	747	577	292	374	1,391
8	Tire Sundries and Repair Materials	4,141	4,376	5,283	5,807	5,044
TOTAL	—Tires and Tire Sundries	$200,874	172,053	158,715	235,657	197,079
	Other Rubber Products					
9	Mechanical Rubber Goods	$ 30,926	28,835	23,629	25,756	26,679
10	Boots and Shoes	22,303	20,986	29,595	26,890	18,174
11	Insulated Wire and Insulating Compounds	7,734	8,199	11,384	7,605	7,039
12	Druggists Sundries, Medical and Surgical Rubber Goods	1,957	2,230	2,133	2,310	2,070
13	Stationers' Rubber Goods	646	682	645	634	712
14	Bathing Apparel	1,597	653	167	465	1,115
15	Rubber Clothing	1,868	1,362	2,559	2,963	1,077
16	Automobile Fabrics	3,021	2,447	1,629	2,380	2,585
17	Other Rubberized Fabrics	2,099	1,739	3,249	3,544	1,694
18	Hard Rubber Goods	1,640	1,587	2,329	2,157	1,308
19	Heels and Soles	5,895	5,774	5,690	5,657	5,823
20	Rubber Flooring	1,137	892	1,268	1,097	1,234
21	Sporting Goods, Toys and Novelties	2,676	1,578	1,421	1,877	2,444
22	Miscellaneous, not included in any of above Items	3,461	3,109	3,076	3,861	3,488
TOTAL	—Other Rubber Products	$86,960	80,073	88,774	87,196	75,442
GRAND TOTAL	—All Products	$287,834	252,126	247,489	322,853	272,521

Crude Rubber Consumed—Long Tons

	Product	2Q-29	1Q-29	4Q-28	3Q-28	2Q-28
	Tires and Tire Sundries					
1	Auto and Truck Casings	89,261	82,393	75,189	72,065	62,197
2	Auto and Truck Tubes	17,038	15,736	12,961	15,426	14,035
3	Motorcycle Casings and Tubes	87	64	57	117	133
4	Bicycle Casings and Tubes	279	248	228	274	233
5	Aeroplane Casings and Tubes	60	27	21	55	28
6	Solid and Cushion Tires	2,733	2,209	2,879	3,488	2,928
7	All other Solid Tires	293	182	63	67	369
8	Tire Sundries and Repair Materials	1,317	1,232	1,574	1,681	1,400
TOTAL	—Tires and Tire Sundries	111,068	102,091	92,972	93,173	81,323
	Other Rubber Products					
9	Mechanical Rubber Goods	6,022	5,783	4,501	4,711	4,210
10	Boots and Shoes	4,740	3,827	4,631	3,906	4,052
11	Insulated Wire and Insulating Compounds	717	1,071	997	901	750
12	Druggist Sundries, Medical and Surgical Rubber Goods	487	537	472	433	363
13	Stationers' Rubber Goods	375	355	324	285	319
14	Bathing Apparel	223	284	140	64	170
15	Rubber Clothing	369	283	344	361	189
16	Automobile Fabrics	365	318	209	254	226
17	Other Rubberized Fabrics	512	452	777	831	377
18	Hard Rubber Goods	317	339	193	294	372
19	Heels and Soles	1,471	1,535	1,299	1,441	1,439
20	Rubber Flooring	298	257	292	299	256
21	Sporting Goods, Toys and Novelties	430	429	307	330	386
22	Miscellaneous, not included in any of above Items	755	719	731	884	788
TOTAL	—Other Rubber Products	17,081	16,189	15,217	14,994	13,897
GRAND TOTAL	—All Products	128,149	118,280	108,189	108,167	95,220

A PIONEER
Supplier of Rubber Chemicals
Celebrates 10th Anniversary

THE history of the rapid rise of the C. P. Hall Company of Akron, Ohio, is one of ten years tireless effort on the part of C. P. Hall, the president and founder of the company, whose personal qualities and business abilities have enabled his organization to grow from one consisting of two members to a personnel of sixteen today. The company is celebrating at the present time its tenth anniversary and THE RUBBER AGE is joined by his customers and his manufacturing principals in wishing him a continuance of his success during the future years.

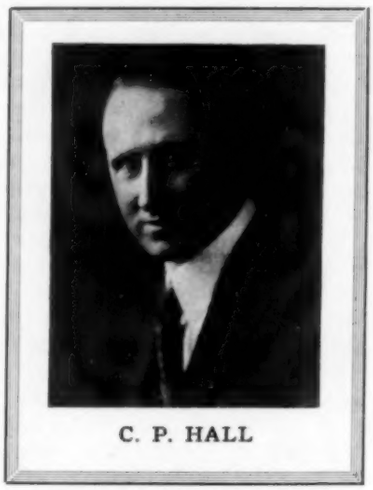
Originally starting as a manufacturer's agent, handling a few leading rubber compounding materials, the company today not only continues this business on a largely increased scale, handling several score of such materials, but it has also branched out on its own account as a manufacturer of a number of materials such as Para-Flux softener, Stabilite age resister, Stabilite Alba stainless antioxidant, Phenex accelerator and S-P-D-X accelerator. In addition the company now maintains a research laboratory where new materials are developed and tested.

His Early Career

While born in Ohio, Mr. Hall received his early education and training at Huntington, W. Va., where his father was connected with the Standard Oil Company of New Jersey, and his first employment was with the Standard. In 1914 he married and moved back to Ohio, settling at Fitchville, where he remained for more than two years. Later he took a position with the purchasing department of the Firestone Tire & Rubber Company at Akron, and it was here that he first conceived the idea of establishing himself as an agent for the manufacturers of the goods he was then buying for his company.

Accordingly in 1919 he resigned from the Firestone organization and opened his own offices as a manufacturer's agent. From a purely local business at the start the company soon expanded its activities into the East and in 1928 an office was opened in Boston to serve the east and another in Los Angeles to handle the business in the rapidly growing western territory. A consistent advertiser for many years, the C. P. Hall Company now enjoys in addition to its domestic business, a large trade in many foreign countries, export sales during the past twelve months being three times as large as that of the previous year. Rubber manufacturers in practically every part of the world are now using Hall materials.

The sales and technical personnel of the organization at the present time consists of the following: C. P. Hall, president; B. E. Dougherty, vice-president and general manager of the C. P. Hall Company, Inc., of Los Angeles; S. A. Davis, manager of the Boston office handling sales in the eastern territory; R. P. Hall, brother of C. P. Hall, on the technical staff at Akron; C. C. Daily, chemist at the Akron office and laboratories; Dr. J. Teppema, chemist in charge of manufacturing and research. In addition the organization includes four office assistants and a staff of six men at the factory.



C. P. HALL

Among the products handled, in addition to those manufactured in its own plant, the company is a large distributor for such materials as the following: *Softeners*—asphalts, oils, stearic acid, oleic acid, rosin oil, mineral rubbers, pine tar, pine tar oil, factice, sponge paste and lead oleate. *Solvents*—naphtha, gasoline, carbon bisulphide and tetrachloride, sulfur chloride, ethylene dichloride and carbiline. *Pigments*—asbestine, barytes, blanc fixe, carbon black, mineral black, charcoal dust, clays, iron oxides, magnesia, mica, sulfur, starch, talc and whiting.

Well-Known Producers Represented

Among the well known producers of materials handled by the C. P. Hall Company are the following: Stamford Rubber Supply Company, Stamford, Conn., rubber substitutes, factice, etc.; J. B. Preston Company, New York City, mica; A. Gross and Company, New York City, stearic acid; Thompson, Weinman and Company, New York City, whiting and clays; American Pine Products Corporation, Boston, Mass., pine products; Dow Chemical Company, Midland, Mich., carbon bisulphide and tetrachloride, sulphur chloride and aniline; Southern Acid and Sulphur Company, St. Louis, Mo., sulfur.

Not only has the C. P. Hall Company introduced its materials into the rubber industry but it has also extended its services and products into other fields such as the soap, paint and paper industries. It endeavors at all times to seek out and furnish to these industries specific chemicals of the most value to the particular manufacturing problem involved.

The Torque Insulator

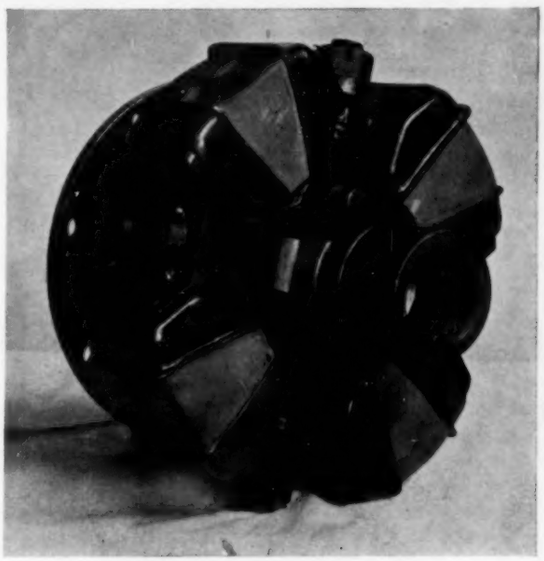
NEGLECTING wear and a very small percentage of failures due to defective material, it may safely be said that practically all service failures in the torque insulator are due to dynamic stresses, or in other words, to shocks or over-loads brought about by inertia forces and rapidly varying velocities.

For example—if we assume that a truck has its rear wheels mired to such an extent as to practically prevent motion, and an attempt is made to get the vehicle out by racing the motor and suddenly dropping in the clutch, the dynamic stresses so produced may exceed many times the highest torque output of motor. The stresses produced by such practice very often causes failure by shock alone and always produces a fatiguing action on the parts to which the stress is subjected and which ultimately ends in a fatigue failure.

The engineering problem of taking care of these dynamic stresses is a difficult one, and in addition, the characteristics of material in general are such that the static strength has an inverse relation to the dynamic strength, and in order to make a part which would successfully stand up under high dynamic stress from the standpoint of material, we find that it would not be sufficiently hard or strong enough statically to withstand the ordinary loads imposed upon it. Again, if the sections were increased to points where they would be sufficiently strong they would in many cases be out of all proportion.

The function of the torque insulator is to prevent these high over-stresses due to shock. A stress which may under severe conditions amount to 300% or greater over-load, is reduced to one of slightly higher than the motor torque. In order to accomplish this, the torque insulator must be sufficiently rigid to transmit the motor torque and and still be flexible enough to show considerable movement through the range of over-load. Further, we have found that the torque insulator is highly efficient in dampening out gear noises caused by periodic variation in the angular velocity of the motor such as is common to all gasoline engines.

From following up experimental trucks working under the severest conditions, we have found that the torque insulator accomplishes exceedingly well the purpose for which it was designed, namely, that of reducing excessive dynamic stresses and the failures which accompany it.



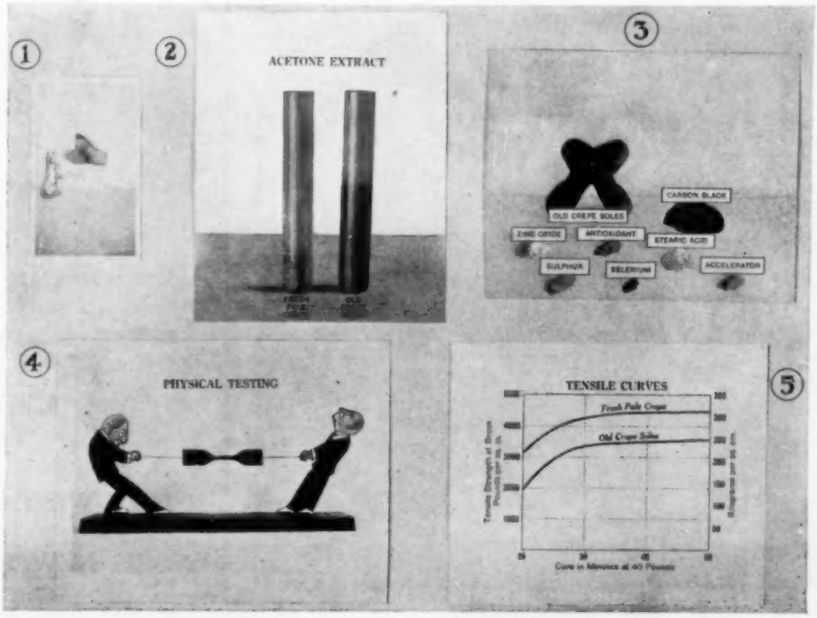
Torque Insulator on Mack Trucks

A Technical "Paperette" on

Service Ageing of Crepe Soles*

A Technical Paper Presented by A. A. Somerville, in a Breezy Way and with Catchy Illustrations

HOW two old pieces of rubber, a pair of worn crepe soles, compare in physical properties with new rubber is the subject matter of this short paper. The illustration shows (at Fig. 1) the pair of old golf shoes with unvulcanized crepe soles which had traveled about 2,500 miles over golf courses during the past five years. They were stubbed and worn and occasionally were put into a dryer overnight at temperatures as high as 140° F. The solubility of these soles were first compared with fresh pale crepe in acetone and it was found that the acetone extract of the old crepe soles was darker than and nearly three times as great in volume as that of fresh pale crepe (Fig. 2). A heavily compounded stock was then made of the materials shown in Fig. 3, a range of cures was used and then tensile tests were made (Fig. 4) and plotted as shown in Fig. 5. The rate of cure was the same for both the new and the old rubber, but the old rubber gave a tensile about 20% lower.



*Presented at the New York Group, Rubber Division, A. C. S., New York, June 21, 1929.

NATIONAL

Para-Nitrosodimethylaniline
Triphenylguanidine
Thiocarbanilide
Aniline Oil

The uniformity, purity, and strength of these accelerators meet the exacting demands of the rubber trade.

Test samples for their adaptability to your purpose.

Intermediates Division

National Aniline & Chemical Co., Inc.
40 Rector Street New York, N. Y.

NATIONAL QUALITY

CALL PIONEER for QUICK DELIVERIES of SULPHUR

NEED Sulphur in a hurry? Then call the "Pioneer" plant at St. Louis. The distance is short, so delivery can quickly be made.

It is an advantage to fill your routine requirements also with "Pioneer" Sulphur. These fast deliveries prevent the slowing up of production processes.

And of course "Pioneer" Sulphur quality is something to rely upon. It is made by the St. Louis Sulphur & Chemical Co., St. Louis, Mo., whose trustworthy business policy is appreciated by our representative customers.

There is more power to your Sulphur Dollars when you buy "PIONEER" BRAND

ST. LOUIS SULPHUR & CHEMICAL COMPANY
Primm & Vulcan Sts., St. Louis, Missouri

WISHNICK-TUMPEER, Inc.,
Sole Selling Agents

NEW YORK, 251 Front Street
CHICAGO CLEVELAND

EDITORIAL COMMENT

Air-Mindedness and Rubber

THE National Air Races, held in Cleveland, during the last fortnight have made the whole country "air-minded" and have gone far to remove any skepticism which might have still existed in the mind of the average citizen as to the future of aeronautics. Beyond the enthusiasm which has greeted this meet, a certain spirit of confidence in the safety of flying was the feature of the events.

But the chief point of interest of the whole performance, from the standpoint of the rubber industry, was the prominence of the rubber manufacturers in the affair. Goodyear was particularly in the fore with its "blimp" demonstrations. There was also a reflected glory for Goodyear in the timely flight of the *Graf Zeppelin,* especially in view of the airliner's connection with the Goodyear-Zeppelin Corporation. The entries of the General Tire and Rubber Company and B. F. Goodrich Company in the Los Angeles to Cleveland race came in first and second respectively.

All of these aeronautical events and the prominent part which rubber is taking in aircraft construction leads one to the sound conclusion that the rubber industry stands in an enviable position on the threshhold of this comparatively infant aviation industry and that with the growth of air transportation the promise for an extensive expansion in the use of rubber equipment is in the close offing.

Incidentally history is repeating itself. The rubber manufacturing industry today is taking the same interest in aviation that it did in the days when the old bicycle industry was turning to the "horseless carriage." It was not long thereafter that bicycle tires become a minor product of the rubber industry and automobile casings went into the lead. It is not to be supposed that we are now seeing the passing of the automobile in favor of the airplane but aviation is coming to a stage where it will exert a big influence on the rubber industry. And in turn, the rubber industry is rapidly getting "air-minded" to a degree where it will find many new points of contact with the aeronautical industry. The reports of the Tire and Rim Association, showing an increasing monthly production of airplane casings, is evidence enough of the hold that aviation is already taking on tire manufacturing industry.

Greater Cotton Consumption

AS a result of an exhaustive survey throughout domestic industrial fields with a view to indicating new possibilities for the use of cotton the Textile Division of the Department of Commerce has recently published a series of bulletins on the subject, No. 6 of which is a review of the use of cotton in the rubber industry. It is interesting to note the proportion of cotton used in the industry to the total cotton fabric production. According to authoritative trade estimates the tire and tube industry alone, during 1928, used approximately 10 per cent of the total production of cotton goods by weight. A total of 702,069 bales of raw cotton went into the manufacture of these cotton goods. By way of comparison, and in showing the important growth of the tire trade, these figures show an increase of 182 per cent over the material used in the tire trade in 1921. When one considers the amount of cotton cloth also used in the proofing industry and in all other rubber goods having cotton as a fabric base, the aggregate must be a commanding figure. The report is well worth reading and has been well prepared.

The fundamental purpose of the study made by the Department of Commerce was to ascertain wherein the rubber industry adapts itself to an increased use of cotton products, not only in the actual manufacture of tires and tubes but also in the manufacturing processes and plant equipment. Several pertinent suggestions are made in this connection in the report, but the most interesting part of the survey deals with the effect of the newly developed "super-quality" tires on the consumption of cotton. It is pointed out that during 1928 approximately 4 per cent more cotton was used per tire than in 1927. This increase, which is the greatest of any noted for the past seven years, can be directly attributed to the introduction of the so-called "super-quality" tires and also to an increase in the number of balloon casings being produced for trucks and buses. Of the 71,850,456 pound increase in cotton consumption during 1928 over 1927, 2,874,020 pounds was the estimated amount of increase due to the extra quantity of cotton used per casing.

If the popularity of the "super-quality" tires continues, therein will be found one of the leading channels for a further consumption of cotton.

The RUBBER AGE

Published on the 10th and 25th of each month. The Only Twice-a-Month Rubber Publication.

THE PALMERTON PUBLISHING CO., INC.
Publication Office, 1-3 Peace St., New Brunswick, N. J.
Editorial Office, 250 West 57th St., New York City
Telephones: Columbus 2923, 2924

General Manager ..... PETER P. PINTO
Managing Editor ..... J. P. BUSHNELL
Assistant Editor ..... T. H. DAVISON
Circulation Manager.....A. M. SMITH

Representatives in all the rubber centers of the United States, Canada, England, France, Germany and the Middle East.

THE RUBBER AGE is published on the 10th and 25th of each month by The Palmerton Publishing Co., Inc., a New York corporation. P. L. Palmerton, President; Earl D. Osborn, Vice-President and Secretary; Peter P. Pinto, Treasurer. Publication Office, 1-3 Peace St., New Brunswick, N. J. Subscription rates: Domestic, $2.00 a year; Canada, $2.50; foreign, $3.00; single copies, 20c. Advertising rates on application.

Contents Copyrighted 1929 by The Palmerton Publishing Co., Inc.

Bardol
Compound 58900

THE life of an automobile tire, after the first 10,000 miles, depends upon how well the compound was dispersed when made. The best dispersed rubber stocks better resist the action of tension, compression, shear and abrasion, and show less energy loss.

Tire manufacturers have found BARDOL, the new Barrett dispersing agent, to be superior in reducing cracking and increasing the life of tire treads. It activates vulcanization and retards aging and energy loss. BARDOL, for perfect compounding, is as necessary as sulphur.

We will be glad to send samples or have our representative call to give further details.

The Barrett Company

40 Rector Street, New York, N. Y.

Barrett
CHEMICALS

EMBOSSING CALENDERS
For Artificial Leather, Oil Cloth,
Carriage and Automobile Covers

DRYING MACHINES
with Copper or tinned iron Cylinders for Cotton Ducks, Drills and Sheetings

The Textile-Finishing Machinery Co.
OFFICE, No. 83 EXCHANGE PLACE
PROVIDENCE, R. I.

PINE TAR
TAR OIL
Made to Specifications
DIRECT SHIPMENT FROM FLORIDA PLANT
Burgundy Pitch - Rosin Oil
Compounding Ingredients
H. T. WEST COMPANY
132 Library St. Chelsea, Boston, Mass.

SPECIAL SOFTENERS

—Better Working Properties before Cure
—Improved Vulcanized Quality
—Lower Raw Materials Cost

TASCO ASPHALT COMPANY

Akron Representative
The F. F. Myers Co.
Akron Savings & Loan Bldg.

HOME OFFICE
238 Wilson Ave.,
Newark, N. J.

Trenton Representative
F. V. Bechtel
289 North Willow St.

Warehouse Deliveries from All Agencies

NEWS of the INDUSTRY

Financial—Business
Building Operations
Personals
New Products

HOOD RATIFIES MERGER WITH B. F. GOODRICH CO.

Stockholders of the Hood Rubber Company and the Hood Rubber Products Company, Watertown, Mass., on August 30 ratified the merger of the assets and properties of the company with the B. F. Goodrich Company, the consolidation being effected through the exchange of one share of Goodrich common for two shares of Hood common stock. The Massachusetts companies will be operated as subsidiaries by Goodrich, and charters have already been filed in Delaware for the organization of two new companies to be known as the Hood Rubber Company, Inc., and the Hood Rubber Products Company, Inc. The former will be incorporated with a capital of $6,000,000 and the latter with an authorized capital of $100,000.

The combined production of Goodrich and Hood will average more than 100,000 pairs of rubber footwear a day, President James D. Tew, of Goodrich, declares. "The Hood company is an important factor in the industry in other lines as well," Mr. Tew says. "Its output in battery boxes, rubber soles and heels and numerous other rubber items aggregates a large volume. The personnel in both factory and field are excellent with commendable efficiency and economy in production and aggressive merchandising policies in its sales activities."

TEXAS RUBBER CONCERN STARTS MANUFACTURING

The Texas Rubber Specialty Company, located at 803 Franklin Ave., Houston, Tex., has just announced the completion of the first unit of its up-to-date rubber factory, the "Texas Rubber Manufacturing Company," located at 920 Adele Street. The new factory is erected adjacent to the Oil Center Tool Company, also an associate factory. Steel molds, used in the rubber factory, are made in this department. Complete facilities are now available to produce within twenty-four hours any rubber product compounded from crude rubber as it comes from the rubber tree.

Texas oil companies have often required rubber goods in a rush, and in the past, their nearest source of supply on special articles has been in northern or eastern states, often requiring time for delivery, in addition to substantial freight or express charges.

The Texas Rubber Manufacturing Company is now manufacturing a large number of rubber products, with particular attention being given to the rubber requirements of some of the Houston oil tool manufacturers, such as rubber hose, rubber slush pump sleeves, valve inserts, pump valves and gland packings.

Firestone Gets Patents

Three patents granted to Akron inventors this month have been assigned to the Firestone Tire & Rubber Company. They include a tire valve patent granted William C. Stevens, a rubber testing device patented by Roy W. Brown, and a collapsible core patented by Horace D. Stevens. William Stevens' application dates from 1922, Mr. Brown's from 1927, and Horace Stevens' from 1925.

Dill Holds Valve Contest

The Dill Manufacturing Company is conducting a nation-wide contest for retail tire and automotive dealers and employes, with a trip to the opening game of the 1929 World Series with all major expenses paid as the prize for the winner. The writer of the best letter on "How Important a Part Do Tire Valves and Valve Parts Play in Our Service Program," in the opinion of a committee of three judges, will win the prize. The contest closes September 25.

Motors for Rubber Plant

The Electric Machinery Mfg. Company, of Minneapolis, Minnesota, announces that it has recently sold to the Firestone Tire and Rubber Company, of Los Angeles, California, fifteen synchronous motors for rubber mill drive in the new plant addition. Eleven motors are 150 HP, 1,000 RPM for driving single 84 inch mill lines; three motors are 800 HP, 100 RPM for direct connection to Banbury mixers; one motor, 600 HP, 125 RPM, will drive a mill line. All the synchronous motors will be controlled with the frequency relay type starters.

C. K. WILLIAMS COMPANY ANNOUNCES NEW SERVICE

The C. K. Williams & Company, Easton, Pa., manufacturers of dry colors and fillers used extensively in the rubber industry, have announced the inauguration of a new service by which deliveries are made around New York immediately from stocks maintained at their warehouse at 70 Kent Avenue, Brooklyn. A second feature of the service has been the establishment of a daily trucking schedule direct from Easton to New York, which will insure adequate supplies being on hand for prompt delivery in less than carload lots to customers within a few hours. R. T. Nicols will be in charge of the new warehouse in Brooklyn and J. M. Heim and Emil Hoefle will be sales representatives in serving the metropolitan area.

MURRAY RETIRES AS HEAD OF AUBURN RUBBER CORP.

Through arrangements just completed, the Auburn Rubber Corp. has announced the retirement of A. L. Murray as active president of the company. The business will now be handled entirely under the direction of W. B. Foshay Co., of Minneapolis, Minn., largest operators of utility and industrial plants, which took over the Auburn factory last November.

Mr. Murray still retains his financial interest in the company and continues as a member of the board of directors. He will also act in an advisory capacity, particularly on the development of new products. Mr. Murray is one of the founders of the company forming a partnership with W. H. Willennar in 1910 for the manufacture of patches and inner-liners for automobile tires. Later automobile tires and C'ment-on soles became the principal products. The company at first was known as the Double Fabric Tire Co., and later the industry was changed to the Auburn Co. and when the Foshay interests became interested the name was made the Auburn Rubber Corp.

The manufacture of tires has been discontinued for the present at least, but many new rubber products have been placed on the market in addition to the production of the well-known C'ment-on rubber soles. Standard rubber soles and sheets have been developed for the shoe finders trade and shoe manufacturers. In addition floor coverings have been added, rubber tile, rolled matting and stair treads. A growing volume has also been worked up in sponge rubber, including mats, kneeling pads, chair seats, etc., and the new development of sponge rubber as today used in automobile window strips, arm rests, etc.

A. J. Kirstin, who came to Auburn for the Foshay interests, will be in complete charge of the company's operation.

GOODRICH WINS RIGHTS FOR TIRE TRADE NAME

The B. F. Goodrich Company has won its fight to restrain the Firestone Tire & Rubber Company from registering the word "Airway" as a trade name for pneumatic tires, because of its similarity to the "Airline" brand name used by Goodrich. The Goodrich Company protested on the ground that the tire trade would be confused and was upheld by the acting examiner of interferences and later by the first assistant commissioner at the Patent Office.

The "Airline" trade name was registered by Goodrich in January, 1927, while the "Airway" brand was not offered for registration by Firestone until April 17, 1928. In view of the similarity, the assistant commissioner followed the rule of holding against the second registrant.

ANDERSON-PRICHARD TO BUILD BRANCH AT AKRON

The Anderson-Prichard Oil Corporation, Oklahoma City, Okla., producer of industrial napthas, will construct a branch bulk plant on Mogadore Road, East Akron, O., consisting of a warehouse, office and eight tanks on two acres of land. The branch plant will carry a minimum of eight grades of special naphthas, which will be brought from Oklahoma and will be made up in laboratories in Akron into formulas required by rubber companies and other industries.

The company will also be able to add a service of emergency shipments in tank car quantities from Akron to points east in order to supply rush material to plants which otherwise would be hindered by difficulty in obtaining such naphthas quickly. The Anderson-Prichard Oil Corporation has been a pioneer in the development of specialty naphthas, and its refinery at Cyril, Okla., makes nothing but special naphthas for various industries.

Barr Increases Sales

The Barr Rubber Products Company, Sandusky, O., manufacturer of toy balloons and rubber novelties, is increasing the number of its employes and considering the possibility of acquiring additional space. The company is developing a large export business in addition to its domestic outlets. President Nelt Barr returned from New York City last month with large orders for shipments to Australia, South Africa, Singapore and London, among other points.

ARTHUR J. LEWIS has assigned to the Miller Rubber Company the patent rights on a device for trimming selvedge edges of rubberized fabrics.

Wildman Rubber Co. Sale

The real estate property of the Wildman Tire and Rubber Company at Port Clinton, O., which was sold at public auction on August 15, through the Industrial Plants Corporation, New York, was purchased for $11,000 by the Port Clinton Fish Company. The machinery and equipment went in small lots to a number of bidders and brought $25,000.

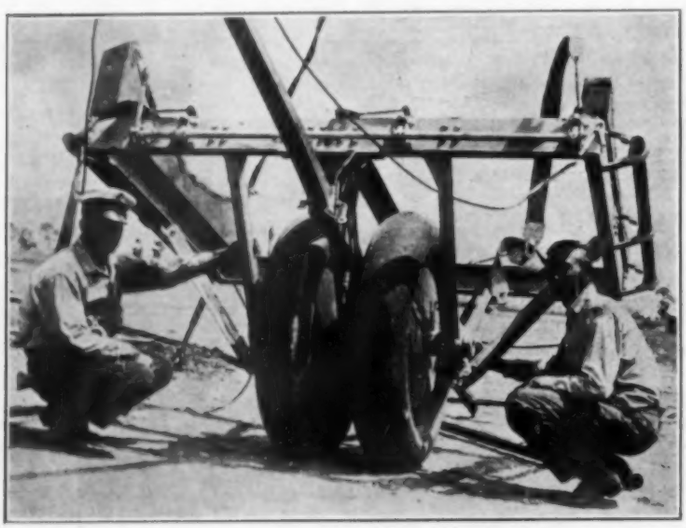
The plant, which was an old one and had not been in operation for seven years, was at one time the factory of the Clinton Tire and Rubber Company and later sold the property and equipment to the stockholders of the Ohio State Tire and Rubber Company, for a price of about $150,000 and later the plant was taken over by the Wildman Co., and was operated only a short time.

DE LASKI & THROPP GET TIRE MACHINE PATENT

A patent on a tire-making machine has been granted at Washington, D. C., to the estate of Peter D. Thropp, deceased, and Lester A. Moreland, of Trenton. The rights of the patent have been assigned to the DeLaski & Thropp Circular Woven Tire Company, of Trenton. Thropp and Moreland made application for the patent in 1923 and were awarded recognition for thirteen patentable features. Charlotte M. Thropp and John E. Throop took, as representatives of the estate, the share in the rights belonging to the deceased.

Two new factory buildings are being erected by the Joseph Stokes Rubber Company, Trenton, N. J. The structures will be of concrete and steel and will cost $20,000. The Puritan Rubber Company has let a contract for an addition to its office in East Trenton.

A Resting Place for the Graf Zeppelin



THIS giant rubber-tired dolly was used to support the rear gondola of the Graf Zeppelin, when the German air liner stopped at Los Angeles, Cal., on its round-the-world cruise. There was no hangar at Los Angeles for the huge airship, and this dolly proved invaluable when the wind swayed the body of the great ship while it was moored to the airport mast. C. W. Frank and Mark W. Milligan, both of the United States Navy, are inspecting the dolly.

RUBBER MACHINERY CO. REPORTS EARNINGS TO DATE

The National Rubber Machinery Company, which was the consolidation of five of the leading equipment manufacturers for the rubber industry, has announced that for the seven months of the current year their net earnings totaled $347,069 after deduction of all charges and taxes, or the equivalent of $3.12 a share on the 111,160 shares of common stock outstanding. The proposed necessary requirement on th ecommon stock was only $2.00 per share.

The company reported gross sales for the same period at $2,509,003. Cash on hand August 20, amounted to $555,800, of which $400,000 was on call. Current liabilities were given as $79,953.

U. S. Rubber Company Profit

A detailed report submitted by the United States Rubber Company to the New York Stock Exchange shows that its net profit of $596,925 for the first half of 1929 is further reduced by foreign income taxes of $19,440 and dividends on minority stock of the Dominion Rubber Company, Ltd., of $8,844, leaving a balance of $568,641 This is equivalent to 87 cents a share on the 651,091 shares of 8 per cent preferred stock outstanding.

A Correction

The statement appearing on Page 565 of THE RUBBER AGE of August 25, 1929, to the effect that the dividend recently paid of 62½ cents per share on the common stock of I. B. Kleinert Rubber Company, was made in error, as the company has never failed to pay its annual dividend since the time of its incorporation twenty-one years ago. The present disbursement of 62½ cents is simply the initial dividend of the stock issued under the new financing agreement affected in May of this year.

Rubber Stocks Irregular

Action in stock issues of rubber companies was mixed during the past fortnight, some closing higher while new lows were made by Fisk, Mohawk, Seiberling and Faultless. Prices of leading rubber company shares on September 4 compare as follows:

	Last Price Sept. 4	Aug. 17	High —1929—	Low
Ajax	4¾	4⅛	11¼	4
Falls	4	4	11⅜	4
Faultless	33	31	39⅞	30
Firestone	240¼	242	309	220⅛
do. 6% pfd.	109¾	109½	111	108
Fisk	8¾	7	20⅛	6½
do. 1st pfd.	42¼	36¼	72½	35⅝
General	250	255	298	236
do. pfd.	94	93	102	93
Goodrich	72⅝	74⅜	105¾	72⅛
do. pfd.	—	111½	115¼	111
Goodyear Com.	111	106⅝	154½	103
do. pr. pfd.	101½	101⅝	104⅞	101
India	40	40	73	39
Intercontinental	8½	8¾	14¼	8⅛
Kelly Springfield	10½	10¼	24	9⅞
do. 1st pfd.	—	60	100	58⅜
Lee	12¼	12½	25	10
Miller	13⅜	14½	28¾	11⅝
do. pfd.	78	78	90½	78
Norwalk	2¼	2	6¼	1¾
Pirelli	63	64	68	50½
Seiberling	28⅞	31	65	28½
do. pfd.	104	104	107⅞	104
U. S. Rubber	45½	45⅝	65	42
do. pfd.	70¼	70½	92½	67½

Names in the News

W. F. V. Cox, secretary of the Institution of the Rubber Industry, London, has been invited to attend the coming meeting of the Rubber Division of the American Chemical Society at Atlantic City, as representing the institute, and will sail on the "Duchess of York," arriving in Montreal around the 20th of September. While on this side of the Atlantic, he also plans to visit Canadian and domestic plants in Toronto, Buffalo, Philadelphia, Akron and other manufacturing centers.

H. B. Slusser, vice-president and treasurer of the Pocono Rubber Cloth Company, Trenton, N. J., is spending a month in California.

William E. Crowley has been made superintendent of the Lambertville (N. J.) Rubber Company. He has been affiliated with the concern for many years. Walter T. Scott, former manager of the Chicago branch of the old Lambertville Company, is located with the home offices.

William Exton, head of the manufacturers' division of the Cupples' Rubber Company, St. Louis, Mo., has been visiting his relatives in Trenton, N. J.

Clifford H. Oakley, president of the Essex Rubber Company, Trenton, N. J., is spending some time with his family in European countries.

George F. Guinzburg, vice-president of I. B. Kleinert Rubber Company, New York City, his been making a business survey of Europe for his company, during which time he laid plans for the establishment of a rubber goods factory to operate in connection with his Paris house in the manufacture of Kleinert products.

Herbert Standring, the well-known British rubber trade journalist, is understood to have severed his connection with his latest venture the *Rubber and Tyre Review*, London. Beginning his journalistic career in 1884 with the *India Rubber Journal*, he resigned in 1920 to start the publication of *The Rubber Age* of London and embarked on his late effort in September of last year.

Cornelius Vanderbilt, Jr., was a visitor to the plant of the Goodyear Tire & Rubber Company and the Goodyear-Zeppelin Corporation last month. He enjoyed a ride in one of the Goodyear airships and is planning to write a comprehensive newspaper article about the activities of the Goodyear-Zeppelin Corporation.

C. H. Johnson has been recently appointed advertising manager of the Fisk Tire Company, Chicopee Falls, Mass. Mr. Johnson resigned from Young & Rubican,

C. H. JOHNSON

Inc., advertising agency in New York City, to accept the position. He has had considerable experience in the advertising business, having been for ten years with the New York office of George Batten Company, Inc., and later with Griffin, Johnson & Mann, Inc., New York City, as vice-president. Mr. Johnson has already assumed his new duties. He will make his home in Springfield, Mass.

Harold A. Denmore of Akron has been granted a patent, covering 35 counts on a tire building machine, including a feeder and guide for the fabric, and for moving and rotating the mandrel on which the casing is built. He has assigned the patent, for which he first applied in 1925, to the General Tire & Rubber Company.

M. A. Marquette has resigned as factory manager of the Corduroy Tire Company, Grand Rapids, Mich., to accept a similar position with O. Englebert Fils & Cie., Liege, Belgium, manufacturers of tires.

J. L. Cohill, assistant export manager of the Firestone Tire & Rubber Company, is now in South America, where he will visit the Firestone branches at Buenos Aires, San Paulo, and other principal market centres. A. R. Reusing, a member of the Firestone export department, who sailed August 2 from New York, has arrived at Amsterdam, Holland, where he will make his headquarters as assistant to William Teeuwen, who has represented Firestone for many years in northern Europe.

Henry R. Minor, inventor of the Minor process of vulcanizing rubber with Carbon dioxide gas and whose patents have been acquired by the Liquid Carbonic Corporation, New York City, has been retained by the latter company to continue further research work with the rubber industry. A description of the new process, written by Mr. Minor, will be found elsewhere in this issue of The Rubber Age.

Hugh Allen, manager of publications for the Goodyear Tire & Rubber Company, traveled from Akron to Los Angeles by the planes of the Transcontinental Air Transport in order to be able to greet the *Graf Zeppelin* on its arrival at the California city.

Harvey S. Firestone, president of the Firestone Tire & Rubber Company, was a guest of honor at the national air races at Cleveland, O., on the day set aside as Edison Day in honor of the noted inventor. Mr. Firestone attended a luncheon given him at the Cleveland airport by the Cleveland Society of Automotive Engineers.

Ward T. Van Orman, aided by Allen MacCracken, will pilot the Goodyear Tire & Rubber Company entry in the International Balloon Race at St. Louis, Mo., on September 28. The pair, who won second place in the National Balloon Race at Pittsburgh this year, will use a new free balloon, the Goodyear VIII, with an 80,000 cubic foot bag.

Harvey S. Firestone, Jr., vice-president of the Firestone Plantations Company, conferred with officials of the State Department at Washington a few days ago with regard to labor conditions in Liberia. A commission composed of one American, one Liberian, and a third member to be named by the League of Nations, is to investigate the Liberian labor problem in the near future.

Consulting Rubber Technologist

PRACTICAL

Twenty years' experience with the largest and most successful companies in the country

Physical and Chemical Testing

Special facilities for abrasion and quick age tests

Expert Advice to Correct Factory Trouble

New Processes and Formulas Developed

R. R. Olin Laboratories

P. O. Box 372, AKRON, OHIO
Telephones: Barberton 828, Portage 5895W

CATALPO

for

Footwear

Rubber News Around the World

BELGIAN RUBBER TRADE DEVELOPING RAPIDLY

The rubber manufacturing industry in Belgium has made a remarkable growth since the war. This development, about which little is so far known abroad, appears to offer Belgium great scope in export trade, especially since rubber from the Belgian Congo offers ample raw material supplies.

Official Belgian statistics show that, whereas in 1925 imports of rubber manufacturers amounted to 6,008,000 kilograms valued at 244,195,000 francs and exports to 2,976,000 kilograms valued at 134,568,000 francs, the corresponding figures for last year were, imports, 5,289,000 kilos valued at 194,386,000 francs and exports, 8,331,000 kilos valued at 303,985,000 francs. During the intervening years imports have tended to shrink both in volume and value, while exports have risen continuously and rapidly.

The growth in the export of rubber tires has been particularly rapid, exports rising from 2,696,000 kilos in 1926 to 4,145,000 kilos in 1927 and to 6,259,800 kilos in 1928. In 1927 and 1928 some 180,000,000 francs of new capital were invested in Belgium's rubber industry. This was on the manufacturing side alone and does not include the substantial sums represented by the investment by Belgian capital in plantations.

Gregory Floats Bond Issue

Gregory Tire and Rubber Company, of Montreal, Canada, will make a $150,000 bond offering coincidentally with a change of management, according to an announcement by the company. The $150,000 issue will be for a ten-year period and will carry interest at 6 per cent. The bonds will be offered at 99 to yield 6.10 per cent. Net earnings for the list fiscal year were in the neighborhood of $25,000, an improved showing compared with the previous year. Frasier Jamieson, who has been general manager, will be succeeded by E. A. Riddell, a director. Installation of new equipment and an aggressive sales policy are also planned.

ARSON SUSPECTED IN LONDON RUBBER FIRES

Two fires in two weeks at the Merton Abbey factory of James Ferguson & Sons, British rubber reclaimers and ebonite manufacturers, caused extensive damage to the electric power plant and vulcanizing building. A curious fact is that in both cases fire started in different parts of the plant at the same time and during the night when no workmen were about. Arson is suspected.

KLEINERT OPENS OWN PARIS RUBBER FACTORY

To meet the demands of increasing business, the I. B. Kleinert Rubber Company, of New York, through their French subsidiary, the Compagnie du Caoutchouc Kleinert, is to open a factory in Paris within a short time, according to George K. Guinzburg, vice-president of Kleinert's, New York. As all necessary equipment has already arrived in Paris from America, production will start by September 1.

The new factory will take care of the continental demand for dress shields and other Kleinert rubber products, obviating the necessity of importing the finished goods from the United States. "We expect to have a popular scale of prices," stated Mr. Guinzburg, "and in combination with the factory in London, which has been in operation more than twenty-five years, we will supply Europe with our products without the problem of importing from our head factory."

The Paris branch office of Kleinert's opened just a year ago, and in twelve months sales have shown 100 per cent increase according to Mr. Guinzburg.

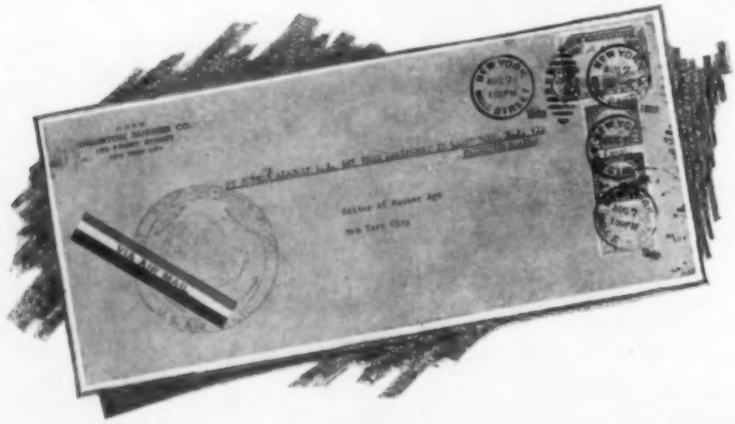
Dunlop May Build on Coast

It is reported that the Dunlop Rubber Company may establish a factory in California to take care of the company's trade on the Pacific Coast and adjacent territory. According to press notices in California papers, A. Schuman, assistant to the president, and J. Buschman, representative of the company at San Francisco, are making a careful survey of the business possibilities of the Pacific Coast with a view of reporting recommendations.

Georg Springer

Georg Springer, managing director of *Gummi-Zeitung*, German rubber trade paper, died on August 20 at the age of 58, following a short illness. He had been head of the publication since 1897 and performed the duties of editor for the greater part of that time.

RUBBER AGE Receives Letter via Graf Zeppelin



THE *Graf Zeppelin*, completing her epochal trip around the world, was the bearer of a letter to THE RUBBER AGE from Clifford C. Johnston, president of the Johnston Rubber Company, 133 Front Street, New York City. The letter was mailed from New York at 1:30 P. M., August 7, the day of the departure of the giant airliner and reached the editorial offices of THE RUBBER AGE at 2 P. M. on August 21, six hours after the *Graf Zeppelin* had landed at Lakehurst, N. J.

In his letter Mr. Johnston speaks of the future outlook for the rubber industry in connection with the advances in automobiles and aeronautics, and voices the opinion that the expansion in aeronautics, while holding great promise for the rubber trade, will not cause any decline in the demands of the automotive industry. Between 1935 and 1940, a probable registration in motor vehicles of 60,000,000 "traversing over 10,000,000 miles of improved highways throughout the world," says Mr. Johnston, "will call for continued expansion programs in both the automobile and rubber industries during many years to come, accompanied by continued growth in the allied, rather than competitive, field of aeronautics."

CATALPO
for
Treads

Rubber Goods and Specialties

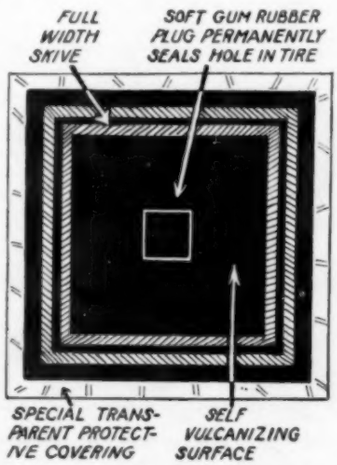
U. S. Royal Master Tire

The most recent addition to the number of "super quality" casings is the new U. S. Royal Master tire, recently introduced by the United States Rubber Company, 1790 Broadway, New York City. The manufacturer announces that this is the finest product that it has turned out in its history, having scien-

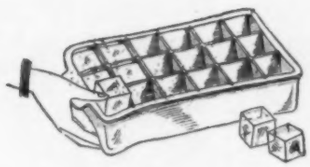
tific design, robust strength, handsome appearance, and being built so as to offer the utmost in the massing of rubber where heavy wear comes, in tread configuration, in carcass construction, and in the adaptation of tire-building principles to modern car development.

Airplane Tire Repair Kit

The Rubber Products Company, Inc., of Fort Worth, Texas, is introducing the first repair kit of its kind to be offered to the airplane trade. With the airplane, weight is a vital factor, and the new kit is designed with the idea of compactness combined with a minimum in poundage. The


FULL WIDTH SKIVE
SOFT GUM RUBBER PLUG PERMANENTLY SEALS HOLE IN TIRE
SPECIAL TRANSPARENT PROTECTIVE COVERING
SELF VULCANIZING SURFACE

assembled kit, in fact, only weighs eight ounces. It includes tube repair kit, an "Ace" junior tire patch and a special "Ace" airplane tire patch. With the kit can be furnished, but it is not included in the kit, a special airplane tire pump, which weighs one pound.



Refrigerator Tray

The removal of ice cubes from metal trays in mechanical refrigerators has always been attended by considerable difficulty. To eliminate this trouble, the Flexo tray of flexible pure gum rubber has been introduced. In order to remove ice cubes from this tray, it is necessary only to bend the rubber slightly. A simple twist enables the user to take out one cube or many cubes with ease. These trays are available in sizes and models to fit all standard makes of mechanical refrigerators.

Rubber Mop for Glassware

A British rubber manufacturer has developed a mop particularly useful for awkwards jugs and vases. It has a strong wire handle, and the mop part is made of rubber. As the pieces of rubber are fixed in spiral fashion and point in every direction, it will efficiently clean ordinary dishes and especially difficult crockery. The mop itself wears well and is easier to keep fresh than the usual type.

Hycoe Radiator Hose

Although Hycoe radiator hose has long been made by the Manhattan Rubber Manufacturing Company, Passaic, N. J., for use as original equipment for many leading cars, trucks and buses, it is new as a replacement item. It is a rugged, long-wearing hose constructed to withstand blistering heat and devastating cold. According to the manufacturers, it is unaffected by oil, alcohol, rust or anti-freeze solutions. It is furnished in three-foot lengths, marked in inches for cutting to the required length. Six three-foot lengths are packed in a carton, and the hose is also furnished in ready cut lengths for certain popular cars.

Rubber Cork With Sheath

For people who carry bottles of liquids with their luggage, an English manufacturer has recently brought out the Simplic rubber stopper, which is intended to prevent any possibility of leakage. The stopper takes the form of a rubber cork with an extended sheath of thinner rubber. The stopper is fitted in the ordinary way and the extension is then pulled down over the neck of the bottle, making an absolutely watertight joint.

Bathing Seat

An inflated rubber cushion in the form of a seat, which enables a bather to float comfortably in a sitting position, is being marketed by the Veritas Gummiwerke, A. G., Berlin, Germany. It is especially popular at ocean beaches, where the waves afford a continual rocking motion. This cushion seat

is so constructed that it is not difficult for a bather to keep it balanced while in the water.

Window Cleaner

An appliance for cleaning and polishing windows has recently been invented by J. Haupel, 94 Mariahilferstrasse, Vienna. It comprises a mouthpiece provided around its edge with a proecting strip of rubber surrounding a detachable moistened pad of sponge rubber, the mouthpiece being connected to a tube for attachment to a source of suction whereby a partial vacuum may be produced on the mouthpiece, causing it to be pressed tightly against the window. A member spaced from the top of the mouthpiece prevents the sponge rubber from being sucked into the tube.

Safety Swimming Belt

In this new swimming belt, the sections that go under the armpits are flat and out of the way so that the arm action in swimming will not be hampered. The Swim-Rite belt, as it is called, will not slip and does

not bind. It can be inflated with a pump or with the mouth, the valve being so constructed that no parts can be lost. It is made in several sizes by the DeLion Tire & Rubber Corporation, 1201 St. Paul street, Baltimore, Md.

Current Crude Rubber Items

RUBBER EXCHANGE FIXES TRADING DIFFERENTIALS

The adjustment committee of the Rubber Exchange of New York have fixed differentials between various grades of Hevea plantation rubber on all grades deliverable on Exchange contracts during September as follows:

"A" Contracts—Off quality first latex crepe, one-tenth cent per pound; good F. A. Q. ribbed smoked sheets, one-half cent; ordinary F. A. Q. ribbed smoked sheets, one and one-tenth cent per pound.

"BB" Contracts: "C" blanket crepe, one-quarter cent per pound; "D" blanket crepe, three-quarters cent per pound; No. 1 brown crepe, contract price; No. 2 brown crepe, one-quarter cent differential.

The committee also fixed the following limits of allowance on the two lowest grades deliverable against the "BB" contracts, as follows: "D" blanket crepe, one-half cent per pound; No. 2 brown crepe, one-quarter cent per pound.

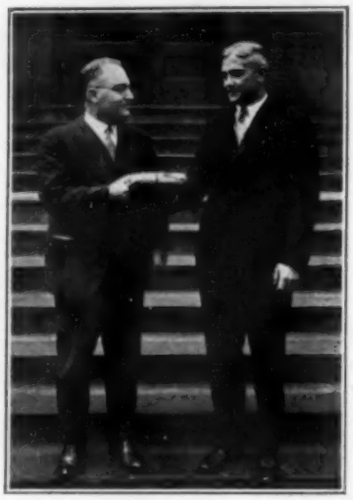
Rubber Exchange News

The Board of Governors of the Rubber Exchange of New York has appointed the following members to serve as a nominating committee which will name candidates for all offices to be filled at the forthcoming election of the Exchange in October: Lawrence G. Odell, chairman; Louis W. Dumont, J. L. Julian, Homer W. Orvis and Joseph S. Rodenbaugh.

The extra membership of Edward J. Wade on the Rubber Exchange of New York was recently sold to William A. Overton, acting for another, for a consideration of $8,000.

Charles D. Culbertson, of Swan, Culbertson & Fritz, Sassoon House, Shanghai, China, has made an application for membership on the Exchange.

Receives Rubber by Airship



J. J. Blandin, crude rubber manager, receiving from C. C. Slusser, vice-president and factory manager of the Goodyear Tire & Rubber Company, a package containing crude rubber shipped via the *Graf Zeppelin* to Los Angeles from Tokio and by air mail to Akron, O.

A growing interest in the Rubber Exchange of New York has been indicated in new members and applications for memberships. It was recently announced that P. J. J. Davenport, of London, had been admitted to trading privileges as of August 17, 1929. Mr. Davenport represents the well-known British rubber firm of J. H. Rayner & Company, Ltd., of Dunster House, Mincing Lane, London.

It was announced at the close of the week that application for membership in the exchange had been received from Mr. Keith Bon, of the rubber firm of the Anglo-French Trading Company, Ltd., Singapore, S. S.

GORDON RUBBER ESTATES WILL INCREASE CAPITAL

At a special meeting in London recently, the shareholders of the Gordon (Malaya) Rubber Estates, Ltd., voted to increase the capital of the company to £300,000 by the creation of 1,500,000 additional shares of 2s. each, ranking for dividend and in all other respects *pari passu* with the existing shares of the company.

Since the last annual meeting of the company, the board of directors, through the manager of Sungei Inas, has purchased a Chinese-owned estate which can be worked in conjunction with that division. An English-owend estate was also purchased for approximately $275,000, both of the new acquisitions being favorably reported on.

"We have taken the average price for the next seven years at 11¼d. per pound," said Sir Francis M. Voules, C.B.E., chairman of the estates. "We have checked over in London the 'all in' costs for the same period and consider we are justified in taking them at 6¼d. per pound. On this basis you will see that during the seven years we should have an average profit of £38,280 per annum, or nearly 15 per cent on the total capital after the acquisition of these properties. Personally, I consider the valuation of 11¼d. likely to be considerably exceeded. We have the balance of our contract of 188,000 pounds at 1s. per pound July to September of this year, and for next year we have sold forward 80,640 pounds at 2s. per pound."

Dealers' stocks of crude rubber at principal primary markets in the Far East totaled 36,651 tons at the close of July, as compared with 33,040 tons on hand June 30. Singapore stocks were 28,505 tons against 24,930 tons a month previous.

Closing Prices on Rubber Exchange of New York, Inc.

FROM AUGUST 19 TO SEPTEMBER 4, 1929

		Spot	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sales*
Aug.	19	19.20	19.70	19.90	20.30	20.60	20.80	21.00	21.20	21.40	21.50	21.70	21.90	——	907
	20	19.60	20.10	20.40	20.80	21.10	21.20	21.40	21.60	21.90	22.10	22.30	22.50	——	936
	21	19.40	19.90	20.20	20.60	21.00	21.10	21.40	21.60	21.70	21.80	22.00	22.10	——	900
	22	19.10	19.60	19.90	20.30	20.60	20.80	21.00	21.30	21.50	21.80	22.00	22.20	——	353
	23	19.40	19.80	20.10	20.50	20.80	21.00	21.30	21.50	21.80	22.00	22.20	22.40	——	381
	24	19.70	20.10	20.40	20.80	21.10	21.30	21.50	21.80	21.90	22.10	22.40	22.60	——	164
	26	19.70	20.10	20.40	20.80	21.20	21.40	21.60	21.80	22.00	22.10	22.30	22.50	——	344
	27	20.20	20.20	20.50	21.00	21.50	21.60	21.90	22.10	22.30	22.40	22.60	22.80	——	1,016
	28	20.30	20.30	20.60	21.00	21.40	21.50	21.70	21.90	22.10	22.30	22.50	22.60	——	946
	29	19.90	19.90	20.20	20.50	21.00	21.10	21.30	21.50	21.70	21.90	22.10	22.30	——	481
	30	19.90	19.90	20.20	20.60	20.90	21.10	21.30	21.50	21.70	21.80	22.00	22.20	——	378
Sept.	3	19.70	19.60	20.00	20.40	20.80	21.00	21.20	21.30	21.50	21.70	21.90	22.10	22.30	167
	4	19.80	19.80	20.20	20.50	20.90	21.00	21.30	21.50	21.70	21.80	22.00	22.20	22.40	249

*In lots of 2½ tons each

CATALPO
for
Mechanicals

INTERNATIONAL PULP CO., *41 Park Row, New York, N. Y.*
SOLE PRODUCERS OF PURE **ASBESTINE** SPECIALLY PREPARED FOR USE IN RUBBER
Covered and Protected by Letters Patent Registered at U. S. Patent Office, Washington, D. C.
LIBERAL WORKING SAMPLE FURNISHED FREE

GOODYEAR LAUNCHES NEW TYPE BLIMP "DEFENDER"

"The Defender," the latest of the Goodyear blimps to be launched at Akron, was given her first trial flight on August 20. It is the largest of the Goodyear blimp fleet, measuring 177 feet in length and 43 feet in diameter, as contrasted with the "Puritan" type of only 128 feet in length by 37 feet in diameter. The new ship will take 160,000 cubic feet of non-inflammable helium gas, as compared with the 86,000 cubic feet required by the "Puritan."

The ship carries six passengers two pilots and two mechanics. The passenger compartment is a unique feature, with sides and ceiling being luxuriously upholstered in attractive velour and furnished with wicker passenger chairs. The compartment is 12x6½ feet, lighted by electricity and has celluloid windows. A speed of 65 miles can be attained.

The pilot room equipment includes a dual control system. The tires on the landing gear are the new Goodyear air wheel, Musselman type. A smaller wheel is attached to the fin to insure more safety in landing and smoothness in takeoff.

Tires Lead Ohio Exports

Rubber tires ranked first in order of value among commodities exported from Ohio during 1928, according to United States Department of Commerce figures. They were valued at $20,786,201 as compared with $25,850,360 for 1927, the decrease being due to the lower prices prevailing. Entire exports from Ohio were valued at $196,518,388 in 1928 as against $186,091,545 in 1927.

Murray Opens Chain Stores

In accordance with previously announced plans, the Murray Rubber Company, Trenton, N. J., has opened 500 chain stores throughout New Jersey and in other states, including Tennessee and Kentucky. Through the new stores the company is said to have increased its sale of tires and tubes.

U. S. Rubber Takes Boston Space

The United States Rubber Company has leased the two six-story and basement buildings at 556-566 Atlantic Avenue, Boston, Mass., containing 23,331 square feet of floor space. The buildings will be used to provide for expansion of operations by the company in the New England district.

CATALPO
for
Frictions

Patent Suit Against O'Donnell

The O'Donnell Rubber Products Company was one of three firms named as defendants in a patent infringement suit filed August 1 in a federal court by the Boston Machine Works Company, Lynn, Mass. The other firms are the Griess-Pfleger Company, Cincinnati, O., shoe machinery manufacturers, and the G. Edwin Smith Company, Columbus, O., shoe manufacturers.

Tingley-Reliance Merger

C. O. Tingley & Company, of Rahway, N. J., and the Reliance Rubber Company, of Keyport, N. J., have been combined under the name of the Tingley-Reliance Rubber Corporation. The company will have offices at 6 Ross Street, Rahway, and will manufacture molded rubber goods, plumbers' supplies and druggists' sundries. The capital stock of the new company is $200,000 preferred and 4,000 shares common. William McCollum, who was president of the Tingley Company, is president of the merged concern. P. N. Furber, president of the Trans-Lux Company, is vice president; J. A. MacEwen, former president of the Reliance Company, treasurer, and David Armstrong, of Rahway, secretary.

Rubber and Asbestos Corporation

The Rubber & Asbestos Corporation is the new name of the company formerly known as the Rubber Cement Manufacturing Corporation of Millington, N. J. The firm also has moved its plant to Jersey City, where it will manufacture various asbestos and rubber products, particularly frictioned gasket cloth, woven sheet packings and rubber compounds for sheet and high pressure packing.

STANDARDS IN
RUBBER COMPOUNDING

MICRONEX
The King of Rubber Pigments

FUMONEX
The Stainless, Resilient, Easy Milling Carbon

VELVETEX
The Economical Carbon Diluent

STEAREX
The Stearic Acid for Rubber

Complete details and information from Technical Service Department

BINNEY & SMITH CO.
41 EAST 42nd ST., NEW YORK, N. Y.

SUGGESTIONS ASKED FOR CENSUS OF MANUFACTURES

With a view to making the forthcoming census of manufactures as responsive as possible to the need of industry for accurate information concerning its own activities, the special advisory committee designated by Secretary Lamont has requested manufacturing organizations, trade associations, and individual manufacturers for advice and suggestions as to the form of the schedule to be used in the enumeration.

The subjects covered by the schedule used in the 1927 census are: Description of establishment; character of industry; time in operation; persons engaged; salaries, wages, and materials; products; power; coal consumed. The committee has invited suggestions concerning the form of questions under all of these subjects except production, which will be taken up directly by the Bureau of the Census with the industrial associations.

In view of the fact that it will be necessary to begin the printing of the general schedule early next month, comments on the general schedule should be sent to the Secretary of the Committee, Thomas W. Howard, 1615 H Street, Northwest, Washington, D. C., as promptly as possible in order that they may be given consideration by the committee preparatory to recommending the revision of the schedule.

Mohawk Builds Addition

The Mohawk Rubber Company is having plans completed for a new three-story and basement addition to its mill at Akron, to be about 80 by 100 feet in size and to cost in excess of $100,000, including machinery.

The Philadelphia Rubber Works Company

Manufacturer of

RECLAIMED RUBBER

of

STANDARDIZED QUALITY

NEW YORK
52 Vanderbilt Ave.

AKRON, OHIO

OAKS, PA.
(Montgomery County)

CLASSIFIED ADVERTISING

Five cents a word, minimum charge $2.00, payable in advance.
Address replies to Box Numbers
THE RUBBER AGE
250 West 57th St., New York City

SITUATIONS WANTED

AMERICAN of long experience and acclimated in tropics desires executive position. Successful in handling Indians, blacks, and other native labor, skilled in camp sanitation, difficult transportation problems, and general management. Will accept assignment to investigate new regions, making reconnoitre survey, photographs, and comprehensive business report, with view to permanent position. Former federal investigator, highest references. Address Box 534, THE RUBBER AGE.

AMERICAN, former Chief Chemist large Canadian tire plant, with eleven years' experience, nine years with two large firms in Akron, Ohio, wishes to communicate with rubber firm having opening in executive personnel. Thoroughly conversant with most modern developments of straight line methods of tire and tube production. Address Box 533, THE RUBBER AGE.

HELP WANTED

WANTED: Chemist, experienced, to take charge of compounding for mechanical goods and specification work by factory located in East. A good opportunity for the right man. In replying state age and give full particulars on past experience and present salary. Address Box 535, THE RUBBER AGE.

FOR SALE

FOR SALE: One Kane 6 HP Steam Boiler and Three Vulcanizing Presses; one single, two double, all like new. Also offset plates for tumbling barrel and moulds. Address Box 10X, Flatbush Observer, 1518 Flatbush Ave., Brooklyn, N. Y.

BUSINESS OPPORTUNITIES

An experienced, dependable broker will aid in financing propositions of merit. Amster Leonard, East Orange, N. J.

MISCELLANEOUS

WANTED MANUFACTURING PLANT
A CORPORATION desires to purchase a manufacturing plant that is now manufacturing tires or molded mechanical goods; give full particulars in first letter. Address Box 530, THE RUBBER AGE.

ADDRESS WANTED
PRESENT whereabouts of Carol Palinske, formerly of Milwaukee. Address Box 527, THE RUBBER AGE.

The Bolton Vertical Bias Cutter

WE HAVE PERFECTED many improved devices for our Bias Cutter which simplify its operation, increase its efficiency and promote greater economy in operation.

Cuts cord or flat woven fabrics with equal ease and precision. Cutting range from 1-4 inch strips to 60 inch. Bias blocks on any angle from the horizontal to 45 degrees.

SPADONE MACHINE CO., INC.
15 PARK ROW NEW YORK, N. Y.
Foreign Representatives: Francis Shaw & Co., Ltd., Bradford, Manchester, Eng.

RUBBER DRYERS

The Hunter Process
in
The Carrier Ejector System Dryer

The successful drying of Rubber is essentially a problem of humidity control. The patented Hunter Process is used exclusively in Carrier Dryers. Carrier automatically controlled dryers reduce time, space and milling costs.

Write concerning your problem

Carrier Engineering Corporation
850 Frelinghuysen Ave. Newark, N. J.

For Rubber Compounding

C. K. WILLIAMS & CO. ANCHOR BRAND DRY COLORS AND FILLERS EASTON, PA. U.S.A.

IRON OXIDES

Asbestine
Barytes
Soapstone
Talc

C. K. WILLIAMS & CO.
EASTON, PA.

SINCE 1880 GUARANTEED

Rand RUBBER GOODS

Dress Shields
Rubber Sheetings
Bunny Baby Pants
Sanitary Requisites
Guimps & Brassieres
Randprint Aprons
All Styles Rubber Aprons
SHEET GUM cut to pattern for manufacturers
Pure Rubber Sheets
Rubber Bibs
Crib Sheets
Bathing Caps
Rubber Specialties
Powder Puff Pockets
Randprint Rubber

"They Last Longer"

Made by
RAND RUBBER COMPANY, Inc.
Formerly Brooklyn Shield & Rubber Co., BROOKLYN, N. Y.

SCOTT TESTERS

Simple enough to be practical. Free from complications and adjustments. Substantial and durable. As well as accurate, easy to read and easy to operate, Scott Testing Machines meet commercial requirements and conditions without sacrificing scientific exactness.

HENRY L. SCOTT COMPANY
PROVIDENCE, R.I.

The CARTER BELL MFG CO

CARTER BELL STANDARD SINCE 1903 RUBBER SUBSTITUTES

150 Nassau Street New York

Try Albert First

QUALITY
USED
MACHINERY
and
EQUIPMENT

L. ALBERT & SON
TRENTON, N. J. AKRON, OHIO

LATE MARKET PRICES

Crude, Scrap & Reclaimed Rubber - Cottons and Fabrics

NEW YORK, SEPTEMBER 4, 1929

COTTON

WHILE the average spot price for middling upland cotton during the month of August was exactly the same as in July at 18.62 cents a pound, the tendency of the market in the closing days of the past fortnight has been decidedly upward, rising to a high point of 19.55 cents on the first trading day of September. The August average price was lower than the figure for the same month in 1928 of 19.28 cents and in 1927 of 20.04 cents.

Drought and weevil damage have caused authorities in the trade to reduce the government's estimate of a yield of 15,543,000 bales made a month ago to as low as 14,800,000 baleæs. The next estimate of the Crop Reporting Bureau is to be released shortly and is expected to be at least 500,0000 bales below the previous figure.

Low stocks of both the raw material and the finished product have been the result of the hand to mouth buying policy followed by both mills and dry goods merchants. This fact is expected to make for a strong position if the crop should be a short one,

High, low and closing prices quoted on September 4 were as follows:

	High	Low Sept. 4	Close	Close Aug. 20
Sept.	——	——	18.99	18.60
Oct.	19.35	18.97	18.97	18.70
Nov.	19.57	19.23	19.21	——
Dec.	19.74	19.39	19.39	——

Tire Fabrics

Consumption of tire fabric has been somewhat lower during August and the first part of September, but prices have remained steady in view of the rising cotton market. Latest closing prices were as follows:

CORD			
Peeler, carded, 23/5/3	lb.	.47 @	.48
Peeler, carded, 23/4/3	lb.	.48 @	.49
Peeler, carded, 13/3/3	lb.	.44½ @	.45½
Peeler, carded, 15/3/3	lb.	.45 @	.46
Egyptian, carded, 23/5/3	lb.	.53½ @	.54
Egyptian, combed, 23/5/3	lb.	.57½ @	.58
CHAFERS			
Carded, American, 8 oz.	lb.	.40 @	.41
Carded, American, 10 oz.	lb.	.40½ @	.41½
Carded, American, 12 oz.	lb.	.40½ @	.42½
Carded, American, 14 oz.	lb.	.39 @	.45
LENO BREAKER			
Carded, American, 8¼ oz.	lb.	.40 @	.46
Carded, American, 10¼ oz.	lb.	.40 @	.46
SQUARE WOVEN			
Carded, American, 17¼ oz. 28-11 ply	lb.	.47 @	.48
Carded, American, 17¼ oz. 10-ply	lb.	.39 @	.40

Sheetings

The sheetings market opened the month of September with more activity, but the 40-inch goods were still rather quiet. Some light sales of 4.25-yard were reported at 7¾ cents, with other constructions unchanged and comparatively dull. Latest price quotations, as reported by the Textile Brokers Association, were as follows:

40-inch, 2.50-yard	yd.	— @	.12½
40-inch, 2.85-yard	yd.	— @	.11
40-inch, 3.15-yard	yd.	— @	.11
40-inch, 3.60-yard	yd.	— @	.09½
40-inch, 3.75-yard	yd.	.09 @	.09¼
40-inch, 4.25-yard	yd.	— @	.07¾

Ducks

Cotton ducks have continued in moderate demand with firm prices ruling. Most transactions involved only small commitments, but these were frequent during the past fortnight. Latest price quotations were as follows:

Belting and Hose	lb.	.35 @	.36
Enameling	lb.	.31 @	.36
Single filling	lb.	.14½ @	.16
Double filling	lb.	— @	.18

RECLAIMED RUBBER

According to the questionnaire reports of the Rubber Manufacturers Association, the total production and consumption of reclaimed rubber in the United States were 62,107 long tons and 62,297 long tons, respectively. Due to this continuing balance between output and use, the stocks on hand have not shown any great fluctuation and are still considered low for this time of the year. Latest prices at the end of the fortnight were reported as follows:

High Tensile			
Super-Reclaim No. 1 Black	lb.	.12¼ @	.12½
Super-Reclaim No. 2 Black	lb.	.11¾ @	.12
High Tensile Red	lb.	.12 @	.12¼
Shoe			
Unwashed	lb.	.07 @	.07¼
Washed	lb.	.09¾ @	.10
Tube			
No. 1 (Floating)	lb.	.13 @	.13½
No. 2 (compounded)	lb.	.10¼ @	10½
Tires			
Black	lb.	.07½ @	.07¾
Black, selected tires	lb.	.07¾ @	.08
Dark Gray	lb.	.10 @	.10¼
Light Gray	lb.	.12 @	.12¼
White	lb.	.12 @	.12½
Truck, Heavy Gravity	lb.	07 @	.07¼
Truck, Light Gravity	lb.	.07¼ @	.07½
Miscellaneous			
Mechanical Blends	lb.	.07 @	.07½
Red	lb	.12¼ @	.12¾

Scrap Rubber

The demand for scrap rubber has been for all types except certain tire grades, but prices have remained firm. Auto tire peelings are reported as selling at a slightly lower figure, as are mixed auto tires. Latest price quotations were as follows:

(Prices to Consumer)

Auto tire peelings	ton 42.50	@45.00
Standard White auto	ton 47.50	@50.00
Mixed auto	ton 26.50	@27.50
Bicycle tires	ton 20.00	@22.50
Clean solid truck tires	ton 24.00	@25.00
Boots and shoes	cwt. 1.45	@ 1.50
Arctics, untrimmed	lb. .00⅞	@ .01
Inner tubes, No. 1	lb. .08	@ .08¼
Inner tubes, No. 2, compounded	lb. .04½	@ .04⅝
Inner Tubes, Red	lb. .05¼	@ .05⅜
Air Brake Hose	ton 32.00	@34.00
Rubber Hose	ton 17.50	@20.00

CRUDE RUBBER

DURING the month of August, the average spot closing price for crude rubber in the New York market was 20.59 cents a pound, the lowest since January of this year. As the past fortnight closed, the quotations current were below the August average and were taken to indicate that September's average might be lowest of the present year.

The chief feature in the early September news was the reported figure for Malayan shipments during August of 50,441 long tons. It has been further rumored that September shipments from Malaya will equal those of last month, and this fact has unsettled the markets in both New York and London.

A rise of 5,000 long tons in stocks of crude rubber at London was also a feature of the period just ended. From 30,167 long tons on July 27, the amount of rubber on hand in the British capital has risen steadily to 35,605 long tons by August 31. London has not had such high stocks of rubber since the end of July of last year, although in past years the amount has been as high as 73,000 long tons.

Consumption of rubber by American factories continues to be lower than in the earlier part of the year. That August absorption will be reported as well below that of July seems generally admitted, but a slight gain during September would not be surprising.

Prices quoted on the New York outside market on September 4 were as follows:

Plantations—		
Ribbed Smoked Sheets—		
Spot-Sept.	.20¼ @	.20⅜
Oct.-Dec.	.20⅜ @	.21
Jan.-Mar.	.21¼ @	.21½
First Latex, crepe spot	.20½ @	.20¾
Amber Crepe, No. 2	.17⅝ @	.17⅞
Amber Crepe, No. 3	.17⅝ @	.17⅝
Amber Crepe, No. 4	.17 @	.17⅜
Brown Crepe, Clean thin	.17¼ @	.17⅝
Brown Crepe, specky	.17 @	.17⅜
Liquid Latex, per gal.	1.00	
Paras—		
Up-river Fine	.21 @	.21¼
Up-river Medium	Nominal	
Up-river Coarse	.11½ @	
Acre Bolivian, fine	.21½ @	.21¾
Caucho Ball, Upper	.11½ @	
Islands, fine	Nominal	
Centrals—		
Central, scrap	.11½ @	.12
Esmeraldas	.11½ @	.12
Balata—		
Block, Colombia	Nominal	
Block, Ciudad	.54 @	

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers		
Spot-Sept.	@	10¼d
Oct.-Dec.	10⅝d @	10½d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers		
Spot	9⅝d @	9¾d

H. MUEHLSTEIN & CO., Inc.

Crude - RUBBER - Scrap

41 East 42nd Street :: New York City

AKRON—1111 Akron Savings & Loan Bldg.
CHICAGO—327 So. LaSalle Street.
BOSTON—176 Federal Street.
LOS ANGELES—728 So. Hill Street.

WAREHOUSES—JERSEY CITY, N. J., and AKRON, OHIO

FACTICE GIVES

That Velvet Feel to Rubber

The STAMFORD RUBBER SUPPLY COMPANY
STAMFORD, CONN.

CLAYS FOR THE RUBBER TRADE

ALUMINITE

The Clay Supreme

UNITED CLAY MINES CORP.
TRENTON, N. J.

High Grade CLAYS of All Kinds

ALUMINUM FLAKE

Standard to the Rubber Industry for 20 Years

ALUMINUM FLAKE *has*

—Low specific gravity
—Extreme fineness
—Exceptional reinforcing and toughening qualities
—Absolute uniformity and purity

Write for information and samples to

THE ALUMINUM FLAKE CO.
AKRON OHIO

Agents

The American Oil and Supply Co. - Trenton, N. J.
Wm. H. Scheel and Co. - - - New York, N Y.
Schofield-Donald, Ltd. - Montreal, P. Q., Canada
The Kawanishi Exporting Co. - - Kobe, Japan
Typke and King - - - - - London, England

There is only one Aluminum Flake-We Make It!

"DURO" BRAND

GUAYULE RUBBER

Washed and dry, ready for compounding. Invaluable in conjunction with Plantation Rubbers and Reclaims as an aid in Compounding.
Especially useful in all Friction Stocks.

CONTINENTAL RUBBER CO., OF NEW YORK
1775 BROADWAY NEW YORK CITY

LATE RUBBER CHEMICAL PRICES

Accelerators — Colors — Softeners — Compounding Materials

NEW YORK, SEPTEMBER 4, 1929

DEMAND from footwear factories for rubber chemicals and compounding materials is making up in some slight degree for the falling off in the direction of the tire plants. Makers of mechanical goods, druggists' sundries, toys and novelties also have been continuing to use chemicals and compounding ingredients in relatively large quantities.

Price quotations on these chemical ingredients have remained steady with the exception of some of the carbon blacks, which have been quoted as much as a cent and a half lower to the pound. Stearic acid has also been weaker, and Stearex has dropped fractionally during the fortnight. Other softeners, as well as practically all accelerators, colors and compounding materials, remain unchanged in price.

ACCELERATORS

Organic			
A-7	lb.	.55 @	.59
A-11	lb.	.62 @	.66
A-16	lb.	.57 @	.61
A-19	lb.	.58 @	.62
A-20	lb.	.64 @	.68
Accelerator 102	lb.		
Accelerator 552	lb.		
Accelerator 808	lb.		
Accelerator 833	lb.		
Aero-X	lb.	.60 @	.65
Aldehyde ammonia, crystals	lb.	.65 @	.70
Aniline oil, drums, f.o.b. works	lb.	.15 @	.16¼
Cryiene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolyguanidine	lb.	.42 @	.52
Diphenylguanidine	lb.	.30 @	.36
Ethylidene anilene	lb.	.45 @	.47½
Formaldehyde aniline	lb.	.34 @	.44
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.62½@	.65
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.35 @	.45
Monex	lb.	3.25 @	—
Oxynone	lb.	.68 @	.80
Para-Nitrosodimethylaniline, f.o.b. works	lb.	.92 @	.96
Piperidine-Piperidyldithio-Carbamate	lb.	4.45 @	4.60
R & H 40	lb.	.40 @	.42½
R & H 50	lb.	.40 @	.42½
R & H 397	lb.	.75 @	.77½
Safex	lb.	1.20 @	1.25
Tensilac, No. 89	lb.	.50 @	.52½
Tensilac, No. 41	lb.	.50 @	.52½
Thermic F	lb.	.50 @	.55
Thiocarbanilide, drums	lb.	.26½@	.28½
Thionex	lb.		
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.58 @	.62½
Ureka	lb.	.75 @	1.00
Vulcanex	lb.		
Vuleone	lb.		
Vulcanol	lb.		
Waxene	lb.	.30 @	.32
Z 88	lb.	.50 @	.60
Inorganic			
Lead, sublimed blue	lb.	.08¼@	—
Lead, white	lb.	.10½@	.12½
Litharge, domestic	lb.	.09 @	—
Magnesia, calcined,			
light	per 100 lb.	5.35 @	5.45
heavy	per 100 lb.	3.65 @	3.75

COLORS

Blacks (See Compounding Materials)			
Blues			
Prussian	lb.	.35 @	.40
Ultramarine	lb.	.26 @	.30
Browns			
Sienna, Italian	lb.	.05½@	.12½
Umber, Turkey	lb.	.04½@	.07
Greens			
Chrome, light	lb.	.27 @	.31
medium	lb.	.28 @	.31
dark	lb.	.31 @	.34
Chromium Oxide, bbl.	lb.	.31 @	.38
Reds			
Antimony			
crimson, 15/17	lb.	.44 @	.50
sulfur free	lb.	.52 @	.60
golden 15/17 F.S.	lb.	.20 @	.25
Indian English	lb.	.08 @	.12
Domestic (Maroon)	lb.	.08 @	.12
Oximony	lb.	.13¼@	—
Red oxide, pure	lb.	.10 @	.12
Venetian red	lb.	.03 @	.06
Vermillion, quicksilver, English	lb.	1.95 @	—
Whites			
Lithopone, Akcolith	lb.	.05 3/5@	.06
Lithopone, Azolith	lb.	.05¼@	.05¾
Lithopone, Vanolith	lb.	.05¾@	—
Titanox, f.o.b. St. Louis	lb.	.08½@	.09
Titanium Calcium Pigment, f.o.b. St. Louis	lb.	.08 @	.08½
Zinc Oxide—American Process			
American Azo:			
ZZZ (lead free)	lb.	.06½@	.07
ZZ (leaded)	lb.	.06⅝@	.06⅞
Zinc Oxide—French Process			
White seal	lb.	.11⅞@	—
Green seal	lb.	.10⅞@	—
Red Seal		.09⅞@	—
Yellows			
Chrome	lb.	.16½@	.17
Ocher, French medium	lb.	.02 @	.03
domestic	lb.	.01⅝@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate	lb.	.10½@	.12
Asbestine	ton	14.75 @	18.00
Barium carbonate	lb.	.02¼@	.02½
Barium Dust	lb.	.05 @	.06
Barytes southern off-color	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½@	—
Blacks			
Arrow "Aerfloted"	lb.	.07 @	.12
Bone Black	lb.	.07 @	.08½
Carbon, compressed	lb.	.06½@	.12
Carbon, uncompressed	lb.	.06½@	.11
Disperso	lb.	.11 @	
Drop Black	lb.	.05 @	.10
Fumonex	lb.	.06 @	.09
Gastex	lb.	.04½@	.08
Lamp Black	lb.	.12 @	.40
Micronex	lb.	.07 @	.12
Velvetex carbon	lb.	.04½@	.06
Blanc fixe dry f.o.b. works	lb.	.03½@	.03⅝
Carrara filler	lb.	.01¾@	.02
Catalpo (fact.)	lb.	.02 @	—
Clay, China, domestic	ton	8.00 @	9.00
Aerfloted Suprex	ton	10.00 @	22.00
Congaree, c. l. f.o.b. mine	ton	9.00 @	—
Lexington	ton	10.00 @	22.00
Mineral Flour, c. l. fob mine	ton	20.00 @	23.00
Tensulite		15.00 @	—
Glues, extra white	lb.	.22 @	.26
medium white	lb.	.20 @	.24
Magnesia, carbonate	lb.	.07 @	.09
Mica (muscovite) 160 mesh			
White, water grnd., c.l.	lb.	.06 @	—
White, water grnd., ton lots, whse.	lb.	.07 @	—
White, water grnd., less ton lots, whse.	lb.	.08 @	—
Off color (biotite)	lb.	.05 @	.07
Rotten Stone (powdered)	lb.	.02½@	.04½
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.30 @	3.70
Talc, domestic	ton	12.00 @	15.00
Whiting, commercial	cwt.	.85 @	1.00
English cliffstone	cwt.	1.75 @	2.00
Superfine	ton	10.00 @	12.00
Witco	ton	12.00 @	—
Wood pulp XXX	ton	45.00 @	—
Wood pulp X	ton	25.00 @	—
Zinc Carbonate	lb.	.09¼@	.10¼
Zinc Stearate	lb.	.24 @	.25

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Montezuma, solid	ton	28.00 @	36.00
Montezuma, granulated	ton	32.00 @	42.00
Paradura	ton	62.50 @	65.00
Pioneer, MR, solid	ton	42.00 @	45.00
Pioneer-granulated	ton	52.00 @	55.00
R & H Hydro-Carbon	ton	27.05 @	29.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	38.00 @	80.00

SOFTENERS

Acids			
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulfuric, 60 degrees	ton	10.50 @	11.50
66 degrees	ton	15.00 @	16.00
Tartaric, crystals	lb.	.37 @	.38
Acids, Fatty			
Stearex	lb.	.15 @	.19
Stearic, double pressed	lb.	.17 @	.22
Alkalies			
Caustic soda, 76%	cwt.	3.76 @	3.91
Soda ash, 58% C.L.	cwt.	1.40 @	
Oils			
Corn, refined, bbls.	lb.	.11 @	.11½
Cottonseed, crude		.08½@	.08¾
Cycline	gal.	.27 @	.34
Degras (c.l. 100 bbls.)	lb.	.03¾@	—
Less c. l. (10-25 bbls.)	lb.	.04 @	—
Lots less than 10 bbls.	lb.	.04¼@	.04½
Fluxrite	lb.	.05 @	.06
Hexalin	lb.	.60 @	—
Acetate	lb.	.70 @	—
Linseed, Raw C.L. bbl.	lb.	.09½@	.10
Palm Lagos	lb.	.07¼@	.07½
Niger	lb.	.07¾@	.08
Vansulol	lb.	.10½@	—
Para-Flux	gal.	.17 @	—
Petrolatum, white	lb.	.08 @	.08½
dark amber	lb.	.03⅝@	.03¾
Pigmentaroil	gal.	.21 @	.26
Pine, steam distilled	gal.	.65 @	.70
destructively distilled	gal.	.55 @	.58
Witco Palm Oil	lb.	.11 @	—
Witco Softener (f.o.b. works)	lb	.02 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.06½@	.07½
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt.	bbl.	9.00 @	10.00
Rosin, grade K, 280 lb. bbl.		8.55 @	—
Pigmentar	lb.	.038 @	.0446
Solvenol, drums	gal.	.48 @	.50
Tarol, drums	gal.	.30 @	.35
Tar Retort, 50 gal.	bbl.	12.50 @	13.00
Solvents			
Acetone, pure	lb.	.13 @	
Alcohol denatured, No. 1 bbls.	gal.	.37½@	.44½
Benzol, 90%	gal.	.28 @	—
Carbon bisulphide	lb.	.05½@	.06¼
Carbon tetrachloride	lb.	.06¼@	.07
Motor gasoline, steel bbls.	gal.	.17 @	—
Naptha, solvent	gal.	.35 @	.40
Turpentine, spirits	gal.	.60 @	.64
wood	gal.	.50 @	.54
destructively distilled	gal.	.40 @	.43
Waxes			
Beeswax	lb.	.56 @	.58
Carnauba	lb.	.33 @	—
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.07 @	.07½
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
Paraffin (c. l.—f.o.b. N. Y.)			
Yellow crude scale	lb.	.03¾@	
White crude scale 124/126	lb.	.04 @	
Refined, 125/127	lb.	.05⅝@	
Refined, 128/130	lb.	.05½@	
Refined, 135/137	lb.	.07¾@	
Refined, 138/140	lb.	.08¼@	
Miscellaneous			
RSL Mold Solution	gal.	.75 @	.100

ANTI-OXIDANTS

Albasan	lb.	.70 @	.75
Antox	lb.		
Neozone	lb.		
Oxynone	lb.	.68 @	.80
Resistox	lb.	.54 @	.57
Stabilite	lb.	.64 @	—
VGB	lb.	.55 @	.66

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.08 @	.15

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.03¼@	.03½
Sulfur flour, Refined, 100% pure (bags)	cwt.	2.40 @	2.75
Commercial (bags)	cwt.	1.75 @	2.10

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

UNEXPECTEDLY heavy imports of crude rubber into American ports other than New York and Boston during July brought the final figure for that month's receipts in this country nearly 2,500 tons above the consumption for the same period. The figure for re-exports will probably result in making consumption and net imports balance evenly. August imports, like August consumption, are figured to be well under those of July, but actual figures have contradicted the estimates of experts so frequently this year that few are attempting to guess what the totals will be shown to be.

Stocks of crude rubber at London rose more than 5,000 tons last month, being reported on August 31 as 35,605 tons, the highest figure attained in a full year. The amount of crude rubber invoiced to the United States has averaged 7,500 tons a week for the past three weeks.

Automobile production shows no sign of the heavy reductions predicted in some quarters, and gasoline demand in the United States rose to a new peak in July, with 36,860,000 barrels consumed, an increase of approximately 20 per cent over the same month a year ago. Decreases are naturally expected in the tire and tube production figures for July and August, but not so large as some authorities looked for.

Latest figures covering imports and exports from the leading producing and consuming countries have been added to the appropriate tables in this section.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available. The section accordingly affords the most up-to-date, complete and convenient statistical service in the industry.

Table of Contents

United States Rubber Imports and Exports
Rubber Consumption in the United States
Rubber Invoiced to the United States
Daily Rubber Prices in New York
Monthly and Annual Rubber Prices
London Official Rubber Prices
Daily Cotton Prices in New York
Stocks of Crude Rubber in the U. S.
Stocks of Crude Rubber in London
Rubber in Singapore and Penang
United States Tire and Tube Statistics
Automobile Production—U. S. and Canada
Rims Inspected and Passed in the U. S.
United States Consumption of Gasoline
Rubber Exports from Producing Countries
Rubber Imports into Consuming Countries

U. S. Imports and Exports of Crude Rubber

YEARS	Gross Imports: Long Tons	Gross Imports: Total Declared Value	Gross Imports: Average Declared Value per pound Cents	Re-exports: Long Tons	Re-exports: Total Declared Value	Re-exports: Average Declared Value per pound Cents	Net Imports: Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1927:							
Jan.	43,340	36,753,719	37.86	1,525	1,444,734	42.28	41,815
Feb.	28,337	23,110,257	36.41	2,451	2,277,297	41.47	25,886
Mar.	35,515	28,693,016	36.07	2,763	3,249,665	52.50	32,752
Apr.	46,202	37,321,505	36.06	1,575	1,428,425	40.48	44,627
May	36,518	30,984,377	37.88	2,782	2,501,562	40.14	33,736
June	33,045	27,850,014	37.62	1,775	1,550,592	39.00	31,270
July	37,677	31,678,259	37.53	1,958	1,569,853	35.59	35,719
Aug.	32,810	26,396,931	35.92	1,809	1,382,768	34.12	31,001
Sept.	33,301	25,314,412	33.94	3,500	3,036,929	38.74	29,801
Oct.	30,184	22,163,282	32.78	2,513	2,042,713	36.29	27,671
Nov.	38,592	27,395,428	31.69	2,469	2,014,196	36.43	36,123
Dec.	30,737	22,213,574	32.26	2,655	2,245,754	37.77	28,082
1928:							
Jan.	39,107	30,278,444	34.56	1,988	1,734,990	38.95	37,119
Feb.	33,663	27,763,655	36.82	2,738	2,229,589	36.35	30,925
Mar.	40,611	32,103,042	35.29	3,718	2,587,435	31.07	36,893
Apr.	37,935	27,287,266	32.11	2,272	1,415,024	27.80	35,663
May	31,059	19,058,672	27.39	2,399	1,386,307	25.80	28,660
June	27,765	14,121,219	22.71	2,621	1,400,697	23.86	25,144
July	31,258	14,144,765	20.20	3,087	1,451,446	20.99	28,171
Aug.	31,204	12,860,150	18.39	2,377	1,084,646	20.37	28,827
Sept.	39,835	16,512,019	18.50	3,038	1,384,148	20.34	36,797
Oct.	44,058	18,200,332	18.44	2,405	1,085,407	20.15	41,653
Nov.	36,519	14,878,441	18.19	2,788	1,207,089	18.52	33,731
Dec.	43,511	17,580,966	18.04	2,738	1,165,743	19.00	40,773
1929:							
Jan.	57,564	22,872,943	17.74	3,663	1,773,401	21.61	53,901
Feb.	64,265	24,760,111	17.20	2,955	1,374,783	20.77	61,310
Mar.	50,604	20,380,905	17.98	4,218	2,094,037	22.16	46,386
Apr.	55,725	25,542,726	20.46	3,293	1,624,237	22.02	52,432
May	51,161	24,355,511	21.25	2 386	1,349,690	21.24	48,325
June	41,663	18,799,307	20.14	3,152	1,470,746	20.83	38,511
July	43,944	19,342,147	19.65				
Aug.							
Sept.							
Oct.							
Nov.							
Dec.							

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1922	1923	1924	1925	1926	1927	1928	1929
Jan.	16,938	30,106	29,058	29,638	32,196	31,518	34,403	43,002
Feb.	14,767	30,149	25,736	19,761	31,136	30,137	33,702	41,594
Mar.	21,408	36,629	28,385	33,498	32,936	36,141	35,688	44,730
Apr.	19,294	29,085	27,129	34,139	32,696	35,871	32,772	47,521
May	23,246	36,155	25,845	35,322	29,364	34,592	37,333	49,233
June	31,713	24,272	22,753	35,822	28,598	33,801	37,676	43,227
July	24,522	17,685	23,396	36,053	27,577	29,219	37,407	41,526
Aug.	29,631	20,359	28,982	35,909	34,533	33,460	42,927	
Sept.	24,410	17,594	31,497	31,691	32,904	27,214	39,882	
Oct.	26,881	21,321	31,520	29,047	29,836	26,790	40,857	
Nov.	24,950	20,437	27,289	28,853	28,080	26,792	37,461	
Dec.	25,070	31,902	27,199	28,748	26,293	25,492	31,232	
Totals	282,560	305,694	328,769	388,481	366,149	371,027	441,340	

Figures on Quarterly Basis

Quarter	1922	1923	1924	1925	1926	1927	1928	1929
Jan./Mar.		96,776	87,609	95,263	94,301	99,216	103,558	128,565
Apr./June	127,360	89,493	75,674	104,099	87,109	103,242	103,500	139,292
July/Sept.		55,621	83,813	99,493	93,793	89,210	117,573	
Oct./Dec.	155,067	63,617	92,656	85,789	83,212	80,860	117,597	
Totals	282,427	305,507	339,752	384,644	358,415	372,528	442,227	267,857

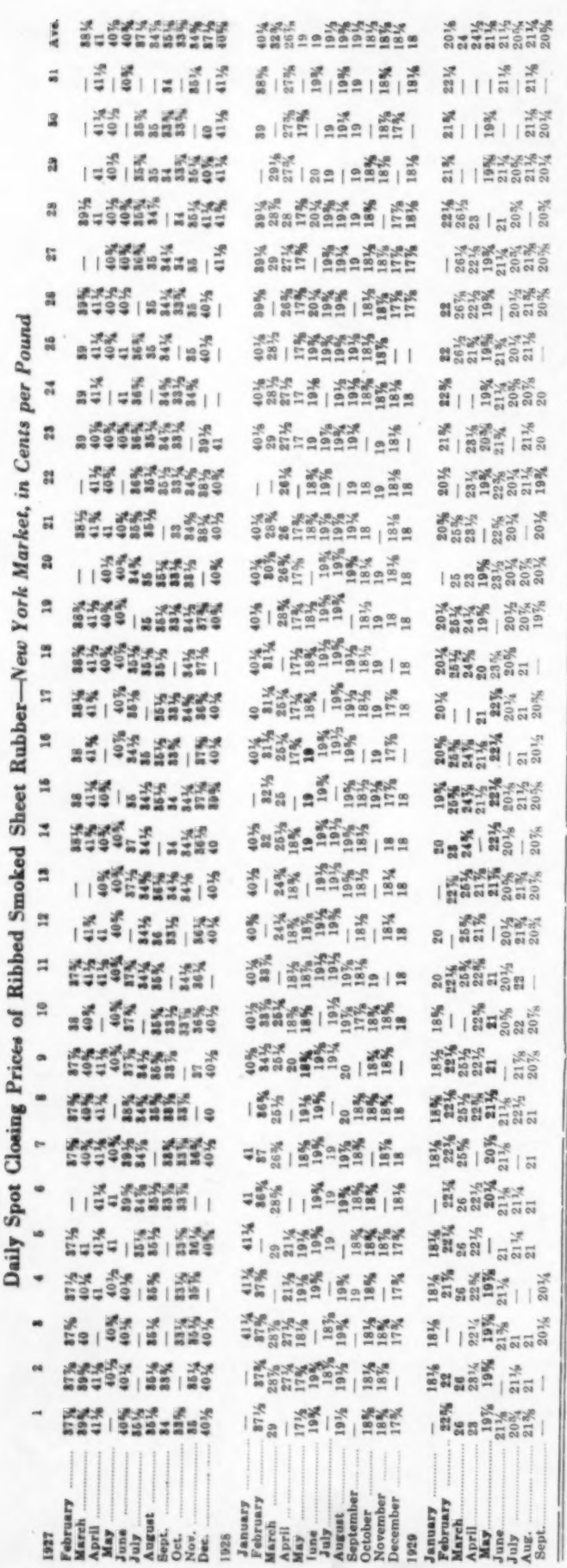
Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
June 8	6,117	1,102	1,808	68	9,095
June 15	6,812	983	1,521	99	9,415
June 22	6,393	802	1,555	132	8,882
June 29	6,103	1,416	1,946	73	9,538
July 6	6,123	358	1,909	86	8,476
July 13	6,648	927	1,708	7	9,290
July 20	5,107	839	1,313	56	7,315
July 27	6,649	432	1,988	75	9,144
Aug. 3	4,784	780	1,251	10	6,825
Aug. 10	5,850	873	1,222	—	7,945
Aug. 17	5,444	593	1,444	33	7,514
Aug. 24	5,560	602	1,401	23	7,586
Aug. 31	5,408	657	1,338	3	7,406

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*



Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Months	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents	1929 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	40.25	20.14
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	32.75	23.97
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	26.82	24.55
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	18.97	21.18
May	15.25	27.39	18.89	58.47	47.75	40.76	18.99	21.46
June	15.11	26.88	18.81	77.26	42.50	37.25	19.59	20.64
July	14.67	26.10	22.16	103.16	41.03	34.87	19.40	21.30
Aug.	13.93	28.84	26.17	82.99	38.50	35.12	19.46	20.59
Sept.	14.44	28.96	27.56	88.88	41.00	33.67	18.47	—
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	18.83	—
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	18.26	—
Dec.	27.42	26.60	37.88	98.51	38.25	40.63	17.97	—
Average for Year	17.50	29.45	26.20	72.46	48.50	37.72	22.48	—

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1	10¾	10⅝	11	—	17	10½	11	10¼	—
2	—	10⅞	11	10¼	18	10½	10⅞	—	—
3	10⅞	10⅞	—	10¼	19	10⅝	10⅝	10¼	—
4	10⅝	10⅞	—	10¼	20	10½	10⅝	10¼	—
5	10⅝	11	—	—	21	10½	—	10¼	—
6	10½	11¼	10⅞	—	22	10½	11	10¼	—
7	10⅝	—	10⅞	—	23	—	11	10¼	—
8	10⅝	11½	10⅝	—	24	10½	10⅞	10⅝	—
9	—	11½	10⅝	—	25	10½	11	—	—
10	10½	11½	10¾	—	26	10½	11⅛	10⅝	—
11	10⅝	11½	—	—	27	10⅝	11⅛	10⅝	—
12	10⅝	11¼	10⅝	—	28	10⅝	—	10½	—
13	10⅝	11¼	10⅝	—	29	10⅝	11	10⅝	—
14	10½	—	10⅝	—	30	—	11	10¼	—
15	10½	11¼	10½	—	31	—	11	10¼	—
16	—	11	10⅞	—					

Average Monthly Price Per Pound

Month	1927 Pence	1928 Pence	1929 Pence	Month	1927 Pence	1928 Pence	1929 Pence
Jan.	19.410	19.310	9.942	Aug.	17.202	9.300	10.505
Feb.	19.021	15.713	11.875	Sept.	16.293	8.530	—
Mar.	20.125	12.736	12.135	Oct.	16.366	8.807	—
Apr.	19.897	8.864	10.490	Nov.	18.159	8.596	—
May	19.769	8.845	10.717	Dec.	19.690	8.570	—
June	17.880	9.293	10.580	Average for Year	18.375	10.656	—
July	16.770	9.312	11.065				

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Aug.	Sept.	Day of Month	Aug.	Sept.	Day of Month	Aug.	Sept.
1	19.20	—	11	—	—	21	18.50	—
2	18.85	—	12	18.10	—	22	18.65	—
3	19.00	19.55	13	18.30	—	23	18.65	—
4	—	19.25	14	18.15	—	24	18.70	—
5	18.90	—	15	18.00	—	25	—	—
6	18.95	—	16	18.20	—	26	18.65	—
7	18.95	—	17	18.35	—	27	18.70	—
8	18.35	—	18	18.35	—	28	18.90	—
9	18.10	—	18	—	—	29	19.05	—
10	17.95	—	19	18.75	—	30	19.25	—
			20	18.85	—	31	—	—

Average Monthly Price Per Pound

Month	1927 Cents	1928 Cents	1929 Cents	Month	1927 Cents	1928 Cents	1929 Cents
Jan.	13.42	19.12	20.22	Aug.	20.04	19.28	18.62
Feb.	14.10	18.40	20.21	Sept.	21.95	18.67	—
Mar.	14.32	19.38	20.19	Oct.	20.22	19.62	—
Apr.	14.75	20.63	20.29	Nov.	20.22	19.84	—
May	16.07	21.58	19.41	Dec.	19.58	20.22	—
June	16.85	21.50	18.74	Average for Year	17.49	19.97	—
July	18.00	21.36	18.62				

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At	ON HAND			AFLOAT			ON HAND AND AFLOAT		
End of	1927	1928	1929	1927	1928	1929	1927	1928	1929
Jan.	76,172	110,244	76,342	45,312	41,256	78,596	121,484	151,500	154,938
Feb.	91,186	108,955	90,058	42,166	43,316	63,825	133,352	152,271	153,883
March	85,740	114,061	100,536	49,600	39,324	56,476	135,340	153,385	157,012
April	92,757	113,083	107,659	38,963	33,986	55,409	131,720	147,069	163,068
May	94,563	105,356	97,192	44,181	34,374	55,404	138,744	139,730	152,596
June	89,250	90,198	92,061	47,233	40,001	46,035	136,483	130,119	138,096
July	98,469	83,242	92,535	40,687	42,304	38,858	139,056	125,546	134,393
Aug.	96,148	68,994		40,937	51,875		137,085	120,869	
Sept.	97,829	68,851		37,966	48,566		135,793	117,417	
Oct.	97,452	66,421		42,804	41,571		140,256	107,992	
Nov.	101,034	61,956		37,076	68,119		138,110	130,075	
Dec.	100,130	66,166		47,938	68,764		148,068	134,930	

(Rubber Manufacturers' Association figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At end of:	1921	1922	1923	1924	1925	1926	1927	1928	1929
Jan.	56,573	67,252	73,498	57,460	27,172	9,994	54,994	66,524	25,191
Feb.	59,439	67,623	70,483	56,732	23,425	10,004	58,826	62,964	25,554
Mar.	63,913	66,670	63,438	55,647	18,104	13,127	63,055	58,272	28,214
Apr.	68,759	68,637	58,770	54,559	12,949	18,773	66,897	53,425	31,368
May	70,403	70,146	54,439	51,615	5,895	20,384	67,169	44,628	31,290
June	69,408	71,597	51,050	51,115	5,318	23,984	63,902	38,756	
July	71,065	71,515	49,937	52,073	4,258	27,727	63,717	35,429	
Aug.	73,211	72,112	58,427	49,700	4,619	30,165	64,491	32,084	
Sept.	72,175	70,977	54,523	44,011	5,453	35,077	68,236	31,440	
Oct.	69,229	68,536	58,891	37,523	5,086	42,138	69,569	24,207	
Nov.	70,786	68,548	60,074	33,593	3,869	44,057	67,050	17,775	
Dec.	69,792	72,299	60,246	29,488	5,697	48,918	63,793	19,815	

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1928					
August	34,294	33,649	32,591	32,815	
September	31,933	31,477	32,110	31,884	31,462
October	29,525	27,370	26,477	24,240	
November	22,919	21,494	20,194	18,724	
December	16,855	16,517	17,669	18,821	19,727
1929					
January	21,953	23,016	23,547	24,423	
February	25,389	25,413	24,757	25,005	
March	25,441	25,920	26,442	27,656	28,077
April	28,934	30,446	30,503	31,213	
May	31,580	31,127	30,955	30,893	
June	31,539	31,635	31,127	30,617	30,982
July	29,996	30,661	30,790	30,167	
August	30,937	31,444	33,573	34,651	35,605

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1927	1928	1929	End of	1927	1928	1929
Jan.	25,440	25,868	29,617	July	22,558	18,663	33,859
Feb.	26,766	22,867	32,373	Aug.	25,764	18,971	—
Mar.	27,844	20,538	29,437	Sept.	25,178	14,898	—
Apr.	24,543	16,946	26,474	Oct.	25,790	12,149	—
May	25,133	17,437	30,764	Nov.	28,369	29,188	—
June	21,898	18,207	30,403	Dec.	25,798	32,895	—

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1926	24,199,524	78.8
1924	21,863,311	19.7	1927	19,700,003	79.1
1925	26,001,664	66.8	1928	24,247,282	81.6
1928			1929		
January	1,835,207	79.4	July	1,896,666	78.2
February	2,265,024	80.8	August		
March	2,613,389	80.4	September		
April	2,729,899	81.3	October		
May	2,574,224	76.5	November		
June	2,184,219	75.3	December		

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1925	1926	1927	1928	1929
January	14,386,000	17,582,000	17,888,000	20,938,000	22,602,000
February	13,210,000	15,814,000	18,240,000	21,136,000	22,776,000
March	14,890,000	19,302,000	22,464,000	24,041,000	28,495,000
April	19,013,000	20,848,000	23,371,000	25,712,000	32,019,000
May	20,459,000	24,213,000	26,579,000	27,355,000	34,117,000
June	20,724,000	23,803,000	27,799,000	29,022,000	33,163,000
July	22,879,000	24,752,000	29,784,000	30,960,000	36,860,000
August	22,323,000	26,912,000	29,779,000	33,148,000	
September	20,177,000	22,929,000	28,409,000	29,691,000	
October	19,826,000	23,973,000	25,497,000	30,610,000	
November	18,024,000	20,618,000	24,400,000	26,222,000	
December	17,954,000	21,419,000	23,718,000	26,644,000	
TOTAL	223,865,000	262,165,000	297,928,000	327,932,000	

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928
Production	40,932	45,259	51,633	60,845	61,237	64,439	77,944
Shipments	39,987	45,204	50,120	59,262	59,002	64,059	74,296
Inventory[2]	6,132	5,772	7,427	8,142	10,456	10,264	13,624

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1927	1928	1929	1927	1928	1929	1927	1928	1929
Jan.	4,965	5,358	6,722	4,932	5,394	6,626	10,432	9,949	13,712
Feb.	5,095	6,363	6,912	4,458	5,031	5,282	11,075	11,721	15,495
Mar.	6,276	6,819	7,519	5,701	5,731	6,708	11,863	12,389	16,351
Apr.	6,299	6,178	7,884	5,701	5,812	7,294	12,122	12,717	16,929
May	6,151	6,759	8,145	5,657	6,457	7,184	12,462	13,024	17,849
June	6,202	6,692	7,304	6,253	7,117	7,254	12,462	12,162	17,957
July	5,087	6,498		5,973	7,895		11,326	11,157	
Aug.	5,752	7,469		6,398	8,403		10,721	10,034	
Sept.	4,822	6,802		5,717	7,145		9,722	9,765	
Oct.	4,773	7,326		4,799	5,717		9,665	11,520	
Nov.	4,502	6,075		4,306	4,998		10,136	12,579	
Dec.	4,497	5,605		4,165	4,591		10,264	13,624	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928
Production	50,850	60,116	70,706	82,614	76,618	70,823	80,186
Shipments	49,673	59,072	68,016	81,004	71,591	72,896	77,127
Inventory[2]	7,643	8,425	11,052	11,313	16,200	13,692	16,117

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1927	1928	1929	1927	1928	1929	1927	1928	1929
Jan.	5,337	5,441	6,517	6,016	6,072	7,242	15,585	12,982	15,386
Feb.	5,658	6,895	6,769	5,120	5,431	5,278	16,075	14,650	16,999
Mar.	7,184	6,231	7,466	6,157	5,731	6,737	17,096	15,573	17,750
Apr.	7,373	6,661	7,634	6,359	5,702	7,164	17,801	16,638	18,134
May	6,737	7,168	7,660	6,140	6,300	7,038	18,389	17,702	18,928
June	6,306	6,953	6,978	6,832	7,136	6,950	17,858	17,159	18,741
July	5,284	6,674		7,070	8,729		16,004	14,974	
Aug.	6,480	8,343		7,983	9,350		14,664	13,931	
Sept.	5,651	7,103		6,758	7,154		13,511	13,543	
Oct.	5,065	6,929		5,024	5,662		13,539	15,285	
Nov.	4,775	5,592		4,723	5,002		13,585	15,743	
Dec.	4,969	5,184		4,712	4,858		13,692	16,117	

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States			Canada			
	Total	Passenger Cars	Trucks	Total	Passenger Cars	Trucks	Grand Total
1922	2,547,208	2,302,923	244,285	102,053	94,904	7,149	2,649,261
1923	4,020,255	3,631,728	388,527	146,438	129,228	17,210	4,166,693
1924	3,600,918	3,203,049	397,869	135,246	117,765	17,481	3,736,164
1925	4,265,704	3,760,459	505,245	161,389	139,311	22,078	4,427,093
1926	4,298,799	3,808,753	490,046	205,092	164,483	40,609	4,503,891
1927	3,393,887	2,938,868	453,019	179,426	146,870	32,556	3,573,313
1928							
Jan.	225,039	199,032	26,007	8,463	6,705	1,758	232,502
Feb.	323,368	290,830	32,358	12,504	10,315	2,189	335,872
March	412,825	371,408	41,417	9,724	7,478	2,246	422,549
April	409,948	364,877	45,071	24,240	20,546	3,694	434,188
May	425,990	375,798	50,192	33,942	29,764	4,178	459,932
June	396,967	356,439	40,528	28,399	25,341	3,058	425,366
July	390,445	237,933	52,512	25,226	20,122	5,104	415,671
Aug.	458,429	400,689	57,740	31,245	24,274	6,971	489,674
Sept.	413,722	358,872	54,850	21,193	16,572	4,621	434,915
Oct.	397,096	339,976	57,120	18,536	13,016	5,520	415,632
Nov.	256,936	217,256	39,680	11,769	8,154	3,615	268,705
Dec.	233,135	205,144	27,991	9,425	6,734	2,691	242,560
TOTAL	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929							
Jan.	402,154	350,617	51,537	21,501	17,164	4,337	423,655
Feb.	466,084	407,589	58,495	31,287	28,486	2,801	497,371
March	584,733	513,266	69,559	40,621	32,833	7,788	625,354
April	620,656	538,679	81,977	41,901	34,392	7,509	662,557
May	603,969	516,055	86,596	31,559	25,129	6,430	635,528
June	545,252	453 956	91.296	21,492	16,511	4,981	566.744
July	500,331	427,213	73,118	17,461	13,600	3,861	517,792
Aug.							
Sept.							
Oct.							
Nov.							
Dec.							

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA[1]								DUTCH EAST INDIES[3]						
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[2]	India & Burma[4]	Sarawak[4]	British North Borneo[4]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[4]	Amazon Valley	All Other[5]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,497	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,523
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,550
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1927:															
July	23,947	12,697	11,250	4,018	827	859	544	333	4,771	6,142	11,566	519	1,757	1,113	43,699
Aug.	30,371	17,105	13,266	5,357	688	1,133	623	546	4,355	6,682	12,440	716	1,928	969	48,703
Sept.	29,835	12,096	17,740	4,911	479	645	566	498	3,635	5,957	9,853	497	2,072	1,213	48,066
Oct.	29,846	15,801	14,045	5,245	802	721	591	542	3,810	7,755	13,633	775	2,752	989	51,520
Nov.	28,277	19,860	8,417	4,464	1,277	1,241	591	600	4,127	6,587	14,395	683	2,369	1,627	46,378
Dec.	32,185	17,865	14,320	4,130	1,395	946	592	664	5,763	7,878	13,438	1,191	3,340	1,444	55,101
1928:															
Jan.	27,789	16,618	11,171	3,839	1,605	842	581	525	4,851	7,988	11,774	1,100	2,273	1,025	47,565
Feb.	28,848	12,911	15,937	4,947	1,081	667	581	536	4,052	6,757	8,630	787	1,612	1,276	46,860
Mar.	27,879	10,508	17,371	3,683	775	645	581	269	3,999	5,825	9,690	700	2,750	1,211	47,499
Apr.	20,139	9,335	10,804	3,233	789	630	494	258	3,993	5,040	5,499	736	1,014	1,323	33,810
May	26,483	10,350	16,133	3,091	654	842	494	241	4,943	5,355	10,347	717	2,602	1,135	45,994
June	22,994	16,168	6,826	3,107	963	926	494	451	5,419	5,863	13,655	725	1,399	960	40,788
July	30,481	13,383	17,098	5,129	1,043	905	593	366	5,602	7,566	11,594	698	1,264	873	52,731
Aug.	35,674	15,114	20,560	5,720	398	1,227	593	544	5,668	7,438	11,893	712	1,732	450	56,936
Sept.	29,769	11,239	18,530	4,675	457	938	594	447	4,956	6,536	9,863	969	1,614	494	50,073
Oct.	24,476	12,603	11,873	3,999	864	949	564	457	5,295	7,474	10,124	513	1,399	732	44,243
Nov.	68,135	10,436	57,699	8,005	1,048	772	564	425	4,950	7,902	7,805	943	1,790	623	92,526
Dec.	66,763	11,122	55,641	7,848	1,113	744	565	294	5,120	8,792	10,896	948	2,220	588	94,769
1929:															
Jan.	52,546	13,415	39,131	8,301	1,664	873	600	461	5,640	8,067	11,076	850	2,134	642	79,439
Feb.	47,926	12,103	35,823	7,064	1,117	955	600	495	6,572	7,511	10,384	807	2,104	520	73,952
Mar.	49,448	14,553	34,895	6,583	1,413	758	601	499	5,515	6,620	10,629	658	2,332	786	71,289
Apr.	49,816	11,414	38,402	5,097	727	747	500	306	5,997	6,645	11,321	568	1,950	569	72,829*
May	43,960	15,593	28,367	5,723	800	966	500*	453	6,264	6,961	13,437	650	1,922	733	66,776*
June	40,398	14,344	26,054	5,563		1,061	500*	422	5,582	6,693	11,270	608	1,398	650*	
July	46,454	15,071	31,383	5,746		1,247	500*	462	6,422	7,192	13,995	555	1,457		

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927 and 1,437 in 1928. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included— such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons in 1926, about ½ ton in 1927, and 1 ton in 1928. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, 84 tons in 1927, and 1,459 tons in 1928. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States[a]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (ed)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	236,977	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	8,995	2,771	3,149	2,418	9	342,378
1920	248,762	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	8,340	5,510	2,292	2,008	567	370,641
1921	179,678	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,562
1922	296,267	11,724	24,352	27,546	9,207	15,934	6,430	2,498	2,643	172	-3,807	1,778	589	567	395,885
1923	300,372	12,700	27,392	18,519	13,277	15,872	8,489	2,986	1,649	2,184	792	2,528	630	1,128	408,018
1924	317,747	-11,550	30,446	22,727	14,299	19,571	8,764	2,846	3,124	2,688	-807	3,178	944	1,370	414,847
1925	381,815	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	516,493
1926	395,667	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	613,649
1927	398,483	60,249	34,271	38,892	26,405	29,521	11,381	12,018	9,490	6,482	636	4,224	2,055	2,672	627,789
1928	404,496	4,846	36,498	37,855	30,447	25,621	12,433	15,134	8,430	7,958	2,243	4,418	3,178	3,138	596,695
1927:															
July	35,719	1,116	2,384	2,899	2,104	1,505	1,007	415	900	429	66	227	177	236	49,184
August	31,001	3,463	2,795	3,119	2,013	1,970	1,274	386	650	604	-63	312	138	123	47,786
September	29,801	7,800	1,956	2,891	1,850	2,025	684	518	772	552	-33	451	155	272	49,694
October	27,671	5,888	3,479	4,202	1,790	1,966	1,021	1,075	908	465	156	401	153	363	49,538
November	36,123	1,687	3,661	4,209	1,916	1,575	1,167	1,312	836	749	298	474	246	317	54,570
December	28,082	309	4,696	3,108	2,302	2,710	1,462	1,458	1,242	784	-202	514	268	300	47,028
1928:															
Jan.	37,120	1,921	1,764	2,485	2,290	1,361	760	755	802	589	52	261	335	376	50,871
Feb.	30,926	3,143	2,526	2,984	2,553	1,248	437	783	616	599	98	307	296	297	46,813
Mar.	36,893	3,179	1,902	3,521	2,989	1,694	763	231	918	816	95	351	497	398	54,247
April	35,663	—2,280	2,204	2,719	1,988	2,334	1,114	1,820	832	575	280	339	304	159	48,001
May	28,660	—5,322	3,297	2,944	2,180	2,288	1,090	3,893	655	746	209	485	220	213	41,558
June	25,143	—3,031	3,597	2,968	2,186	2,102	984	4,111	348	743	133	346	251	182	40,063
July	28,170	—1,374	3,518	3,387	2,692	2,026	1,598	724	591	895	395	294	175	384	43,475
Aug.	28,827	48	3,527	2,744	2,447	1,868	875	632	707	519	316	359	58	94	43,021
Sept.	36,800	4,199	3,524	3,553	2,812	1,837	1,278	20	603	597	345	377	277	235	56,457
Oct.	41,667	—934	3,728	4,386	2,943	3,711	1,049	98	766	696	141	527	250	318	59,346
Nov.	33,846	—3,141	3,278	3,694	2,799	2,150	1,340	689	837	544	31	337	252	282	46,938
Dec.	40,781	8,438	3,633	2,470	2,618	3,002	1,145	1,378	755	639	148	435	263	200	65,905
1929:															
Jan.	53,922	11,951	5,645	4,711	3,759	3,776	1,481	956	1,061	749	218	638	179	525	89,571
Feb.	61,331	5,179	5,001	4,613	2,908	2,727	1,259	684	1,131	627	113	226	115	356	86,275
Mar.	46,391	9,068	4,409	4,586	4,961	2,630	1,515	716	725	931	316	354	80	409	77,091
Apr.	52,447	8,295	4,854	5,351	3,177	2,808	1,407	703	1,518	750	144	956	40	445	82,395
May	48,350	5,112	3,152	3,682	2,937	2,314	1,417		1,437	854	201	468	37	277	
June	38,676	5,361		3,948	3,075		1,624		2,215	672	687			427	
July	41,114			3,559											

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. *United States imports of guayule are not included in this compilation; such imports amounted to 4,305 tons in 1926; to 5,010 tons in 1927; to 3,076 in 1928; and to 208 tons in the first 5 months of 1929.

Domestic Production of Miscellaneous Rubber Goods

	Rubber Proofed Fabrics Yards	Rubber Heels Pairs	Rubber Soles Pairs	Mechanical Goods Shipments Dollars
1924	25,020,000	186,279,000	(1)	$48,615,000
1925	23,988,000	206,970,000	16,211,620(2)	64,877,000
1926	29,328,000	183,312,000	12,253,000	76,789,000
1927	37,872,000	201,014,000	27,160,000	68,625,000
1928	41,179,000	235,170,000	37,645,000	69,114,000
1928:				
January	2,177,000	17,682,000	3,431,000	$5,630,000
February	2,575,000	19,181,000	3,628,000	5,838,000
March	2,853,000	22,583,000	3,747,000	6,675,000
April	2,416,000	18,575,000	2,928,000	5,406,000
May	2,744,000	21,597,000	3,519,000	6,274,000
June	2,953,000	18,763,000	3,321,000	6,126,000
July	3,447,000	17,620,000	3,168,000	5,157,000
August	4,613,000	21,289,000	3,461,000	6,306,000
September	4,966,000	21,451,000	2,725,000	5,393,000
October	5,914,000	21,932,000	2,297,000	5,837,000
November	4,173,000	18,686,000	2,649,000	5,201,000
December	2,848,000	15,811,000	2,771,000	5,271,000
1929:				
January	2,828,000	19,975,000	3,876,000	6,033,000
February	3,095,000	18,979,000	2,869,000	6,135,000
March	4,123,000	17,226,000	2,746,000	7,013,000
April		17,256,000	2,601,000	

(1) Not available; (2) Last 9 months only.
Source: "Survey of Current of Business of the Department of Commerce."

United States Imports of Guayule Rubber and Related Gums

(All quantities in Long Tons)

	Guayule		Balata		Jelutong		Gutta Percha	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
1919	1,430	760,690	727	937,038	8,332	2,213,964	2,900	1,068,698
1920	758	345,985	1,064	1,260,043	5,672	2,068,501	3,183	1,520,309
1921	58	26,945	814	1,077,859	1,745	351,893	985	333,564
1922	127	57,040	812	978,765	2,335	403,812	818	281,012
1923	1,155	542,227	700	898,524	4,565	853,308	912	375,167
1924	1,356	536,392	464	568,456	6,165	1,237,100	1,408	463,610
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	1,603	629,284
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	1,445	661,156
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,494	728,172
1928:	3,075	1,755,685	731	430,855	7,552	2,540,059	1,597	777,128
Jan.	432	242,339	27	24,218	588	183,705	150	86,702
Feb.	489	281,295	33	32,165	403	142,621	312	215,085
Mar.	575	365,927	32	26,460	829	388,616	115	57,833
Apr.	512	312,131	47	32,924	592	174,970	68	27,627
May	452	233,414	—	——	679	226,064	100	42,762
June	424	220,081	9	6,799	293	91,152	28	12,374
July	191	100,342	123	46,747	373	113,295	81	27,344
Aug.	—	——	399	165,460	451	126,962	147	60,738
Sept.	—	——	60	38,198	2,028	713,736	125	56,768
Oct.	—	——	121	59,358	429	129,065	239	94,570
Nov.	—	——	59	41,119	472	140,116	88	35,409
Dec.	—	——	83	58,311	522	156,154	145	59,911
1929:								
Jan.	—	——	46	30,374	484	152,260	138	62,950
Feb.	—	——	82	70,209	823	255,594	40	19,806
Mar.	—	——	90	75,444	428	122,026	1	1,140
Apr.	83	38,241	163	93,240	1,086	315,621	1	1,086
May	125	57,260	70	67,891	752	212,400	76	24,053
June	145	62,808	31	26,038	802	248,143	77	25,612
July	200	86,175	49	46,440	572	180,065	14	5,807

Reclaimed Rubber in the United States

(All Quantities in Long Tons—100% Basis)

Year	Production	Consumption Tons	Consumption % to Crude	Stocks*	Year	Production	Consumption Tons	Consumption % to Crude	Stocks*
1919	81,366	73,535	36.3	.....	1924	80,079	76,072	22.4	.....
1920	86,395	75,297	38.4	.....	1925	132,930	137,105	35.6	13,203
1921	36,725	41,351	24.1	.....	1926	180,582	164,500	45.9	23,218
1922	57,884	54,458	19.3	.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,534	22.7	.....	1928	208,516	223,000	50.4	24,785
1927:									
Jan.	16,526	12,374	39.3	25,903	July	15,488	13,842	47.4	26,599
Feb.	15,860	14,424	47.8	27,291	Aug.	15,109	15,836	47.3	25,157
Mar.	16,788	13,528	37.4	27,124	Sept.	14,392	14,790	54.3	23,429
Apr.	14,483	16,677	46.5	25,712	Oct.	16,127	17,292	64.5	22,176
May	16,159	15,754	46.1	26,419	Nov.	15,477	14,876	55.5	21,728
June	16,652	15,547	46.0	25,811	Dec.	16,083	13,431	52.7	24,980
1928:									
Jan.	14,862	20,140	58.5	21,941	July	17,278	19,070	51.0	17,305
Feb.	15,291	18,670	55.4	20,848	Aug.	19,049	17,890	41.7	15,881
Mar.	17,069	20,680	57.9	19,558	Sept.	18,693	17,795	44.6	17,991
Apr.	15,393	19,280	58.8	19,283	Oct.	17,182	18,420	45.1	17,026
May	18,945	20,215	54.1	18,137	Nov.	18,245	18,380	49.1	22,399
June	18,781	18,140	48.2	18,709	Dec.	17,728	14,320	45.9	24,785
1929:									
Jan.	18,685	21,068	49.1	24,394	July	18,387	20,236	48.7	19,679
Feb.	18,094	19,829	47.7	23,305	Aug.				
Mar.	19,984	20,867	46.7	22,076	Sept.				
Apr.	19,899	22,435	47.3	20,680	Oct.				
May	20,385	23,176	47.1	19,479	Nov.				
June	18,416	18,141	42.0	17,980	Dec.				

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927 and 9,577 tons in 1928.

INDEX TO ADVERTISERS

Adamson Machine Co. 599, 635
Akron Equipment Co. 598, 635
Albert & Son, L. 629, 635
Aluminum Flake Co. 631, 633
American Cyanamid Co. 634
American Pine Products Corp. 598
Anaconda Zinc Oxide Dept. of I. L. R. Co. 634
Anderson-Prichard Oil Corp. 634

Barrett Co., The 620, 634
Binney & Smith Co. 627, 634
Bridgwater Machine Co. 635

Cabot, Inc., Godfrey L. ..... Back Cover, 633
Cambridge Instrument Co. 599
Carrier Engineering Corp. 629, 635
Carter Bell Manufacturing Co., The 629, 634
Chalfin, Inc., Joseph 636
Cleveland Liner & Mfg. Co. 636, 643
Continental Rubber Co. 631, 636
Cooper, Wm., & Nephews 633

Damascus Manufacturing Corp. 634
Dill Manufacturing Co. 634
Dovan Chemical Corp. 633
du Pont de Nemours & Co., E. I. 633

Emerson Apparatus Co. 635
Erie Foundry Co. 635

Foote Bros. Gear & Machine Co. 635
Farrel-Birmingham Co., Inc. 592, 635
Franz Foundry & Machine Co. 635

General Atlas Chemical Co. 634
General Tire & Rubber Co. 636
Gross, A., & Co. 634

Hall Co., The C. P. 591, 634
Huber, J. M., Inc. 593, 634

India Machine & Rubber Mold Co. 635
International Pulp Co. 626, 633

Lowe Co., The Clyde E. 635

Maywald, Fredk. J. 636
McNulty, Joseph A. 634
Montgomery, W. L., & Co. 634
Moore & Munger 634
Muehlstein & Co., Inc., H. 631, 636

National Aniline & Chemical Co. 618, 633
National-Erie Co. 635
Naugatuck Chemical Co. 602, 633
New Jersey Zinc Co. 545, 634

Olin Laboratories, The R. R. 623, 636

Pequanoc Rubber Co. 596, 636
Philadelphia Rubber Works Co. 628, 636

Rand Rubber Co. 629, 636
Rare Metal Products Co. 633
Roessler & Hasslacher Chemical Co. 633
Royle & Sons, John 594, 635
Rubber Regenerating Co. 590, 636
Rubber Service Laboratories Co., The 633

Schrader's Sons, Inc., A. 636
Scott Co., Henry L. 629, 635
Smith and Smith 636
Southwark Mfg. Co. 634
Spadone Machine Co. 629, 635
Stamford Rubber Supply Co. 631, 634
St. Louis Sulphur and Chemical Co. 618, 634

Tasco Asphalt Co. 620, 634
Textile Finishing Machine Co., The 620, 635

United Clay Mines Corp. 631, 633
U. S. Rubber Co. 597, 634
U. S. Rubber Reclaiming Co. 601, 634

Vanderbilt, R. T., & Co. ..... Front Cover, 633

Weber, Hermann 636
West, H. T., Company 620, 634
Whittaker, Clark & Daniels, Inc. 633
Williams, C. K., & Co. 629, 634
Williams Foundry & Machine Co., The 635
Wilson Co., C. T. 636
Wishnick-Tumpeer, Inc. 633

CLASSIFIED ADVERTISING—PAGE 628

Institution of the Rubber Industry

The various papers dealing with the scientific and technical aspect of rubber manufacture, together with the discussions thereon, read before the Institution of the Rubber Industry, London, England, appear exclusively in the Institution's official journal—the

"I. R. I. TRANSACTIONS"

The Journal is published six times a year, each issue containing approximately 100 pages of papers of vital interest to all interested in the manufacture and cultivation of Rubber, Gutta Percha and Balata.

Price 4s. 6d. per copy, post free.
£1.7.0. for 6 copies, post free.

Apply for Specimen Copy to W. F. V. Cox
Institution of the Rubber Industry
Faraday House, 10, Charing Cross Road
LONDON, ENGLAND

In the lead for more than 40 Years

GUMMI-ZEITUNG

Trade Journal for the
RUBBER, GUTTA PERCHA, ASBESTOS,
CELLULOID and Allied Industries

Central Organ for the
Whole German Rubber Goods Industry

Published Every Friday

SUBSCRIPTION RATES

In United States	RM 32
Domestic	RM 24

Sample copy free

WORLD WIDE CIRCULATION

Main Office of GUMMI-ZEITUNG
Berlin SW 19, Krausenstrasse 35/36

Best Advertising Results for all those desiring to make trade connections in Germany in this field.

THE RUBBER AGE

(of London)

THE MONTHLY PUBLICATION
for
ALL BRANCHES OF THE RUBBER INDUSTRY

Circulates Among Raw Rubber Producers,
Importers, Manufacturers
and Dealers

Published on
1st of each month

Subscription 10/- per annum
Single copies 1/3d post free

OFFICES:—43 ESSEX STREET, STRAND, LONDON, W.C.2.